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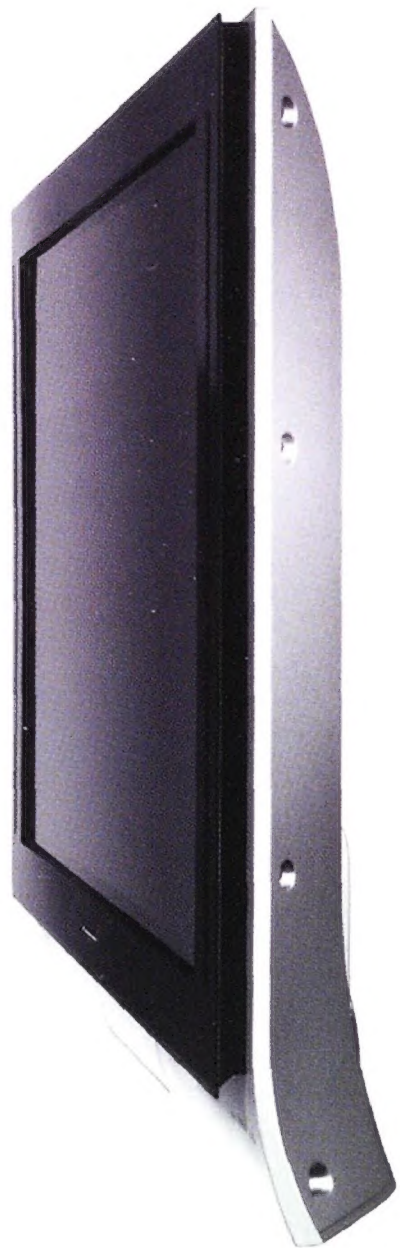

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From a new photo book about America: the Oakland (California) Women's Rowing Club digs in on nearby Lake Merritt.

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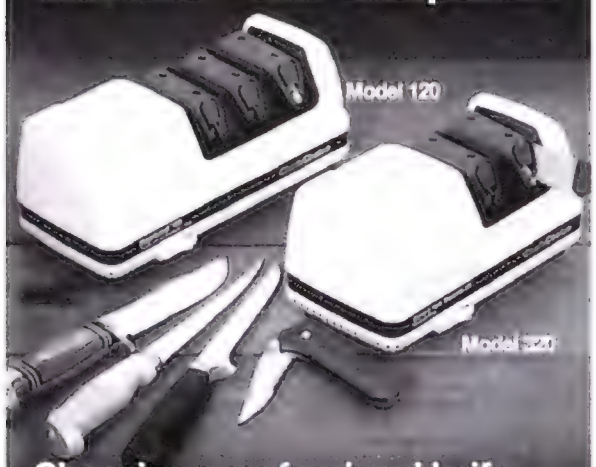

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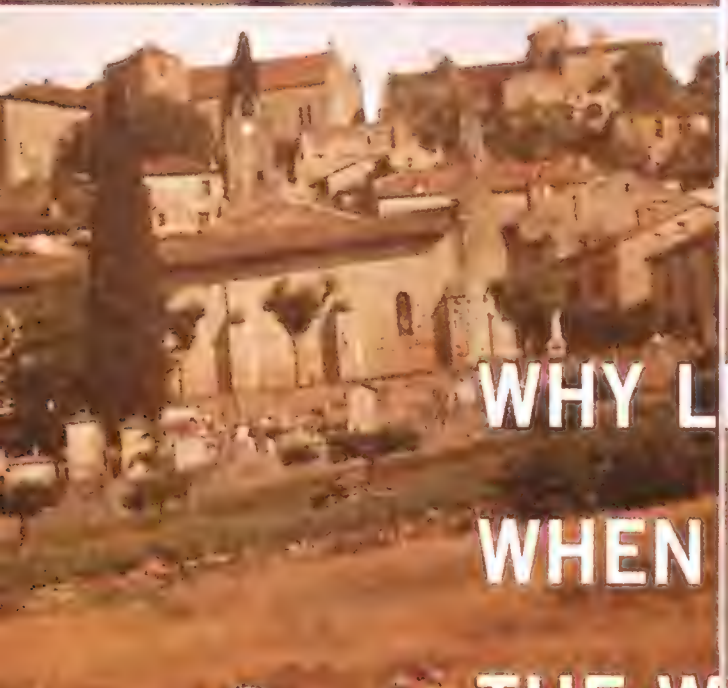

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Our Man in Karbala

Coming to terms with Shiite beliefs

BY CAREY WINFREY

Cockburn (at Karbala's sacred shrine of Abbas): "The scariest 90 minutes of my life."

IN OCTOBER, Andrew Cockburn spent two hectic weeks in Iraq reporting our story on the Shiites ("Iraq's Oppressed Majority," p. 98), members of the diverse Muslim sect that may well hold the key to the nation's future. He was interviewing a senior Shiite leader in Baghdad when the man suddenly stood up and announced he had to attend a *majlis aza'a*—a ceremony of mourning—for a high-ranking officer in the Badr Brigade, the Shiites' unofficial army. (He had been killed in a car crash.) Cockburn invited himself along and soon was hurtling toward Sadr City, the huge Shiite slum that has lately seen deadly clashes between Shiite fundamentalists and American soldiers. At the ceremony, Cockburn and his senior Shiite companion were ushered to a line of chairs reserved for dignitaries. "So for the next hour I accepted the condolences of sobbing Shiite guerrillas," he says.

A few days later, Cockburn was in Karbala, one of the Shiites' holiest cities, to observe a 15th Shaban celebration, which drew more than a million people to a plaza adjoining two of Shiite Islam's most sacred shrines. After several hours, Cockburn and some companions decided the time had come to leave. But the way was largely blocked by jostling celebrants, and the bus merely inched along for 90 minutes—"the scariest of my life. Hurting someone could have had very nasty consequences." Less consequential, but more surprising, was meeting a Baghdad book merchant who had spent two years in prison for selling a bootlegged translation of a book about Saddam Hussein that Cockburn and his brother Patrick wrote in 1998. It turned out the man was actually nostalgic for the excitement of the bad old days. Selling books without fear, he told Cockburn, just "*wasn't* the same." ○

Smithsonian PHOTO CONTEST

Last call: Our photo contest deadline is December 31, 2003. For rules, visit www.smithsonianmag.com and click on "Photo Contest" or see the Editor's Note in the September 2003 issue.

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A Century's Roar and Buzz

Thanks to an immigrant's generosity, the Steven F. Udvar-Hazy Center opens its massive doors to the public

STEVEN UDVAR-HAZY did not actually leave the ground when he first felt the release of flight. The year was 1953, he was 7 years old, and his parents had taken him to a military air show in their native Hungary, then occupied by the Soviets. Forty-six years later, Udvar-Hazy recalled the day: as planes rose from the earth and left behind the harsh circumstances of occupation, the boy realized "that an airplane rising into the sky is the hope, the only way to reach into a bigger world, a world representing his future." Udvar-Hazy and his family came as refugees to the United States in 1958, and here he found his bigger world. He started his first company in 1966, while attending UCLA, and in 1973 he co-founded the International Lease Finance Corporation, which grew to be the world's leading lessor of commercial aircraft.

In October 1999, Steven Udvar-Hazy said that it was time to give back to America a portion of the wealth aviation had bestowed on him. In an act of appropriately soaring generosity, he donated $60 million to the Smithsonian (and later increased the amount to $65 million) toward the costs of a mammoth new complex near Dulles Airport in Virginia, where the Institution will display airplanes and spacecraft too big and too numerous for the already vast capacity of the Air and Space Museum on the Mall. Udvar-Hazy said of the gift, which at the time was the largest ever made to the Smithsonian: "It properly mirrors my love for aviation." More than that, it mirrors his great love for the country where the unpredictable flight plan of a boy's life had set him safely down.

On December 15, two days shy of the 100th anniversary of the Wright brothers' first successful flight in a powered heavier-than-air machine, the Steven F. Udvar-Hazy Center, a spectacular companion facility to the Air and Space Museum, will open to the public. (The various components of the new museum will cost some $311 million in all. To complete the project, we still need to raise $92 million in private funds.) The largest single structure of the center is the aviation hangar, a steel-ribbed architectural wonder, with a breathtaking expanse of unobstructed interior space. How big is the hangar? Well, there are the sober measurements: 986 feet long, 248 feet wide and 103 feet high at the apex of its curved roof. And there are the whimsical measurements: the interior volume of the building is roughly equivalent to the volume of 40 Goodyear blimps.

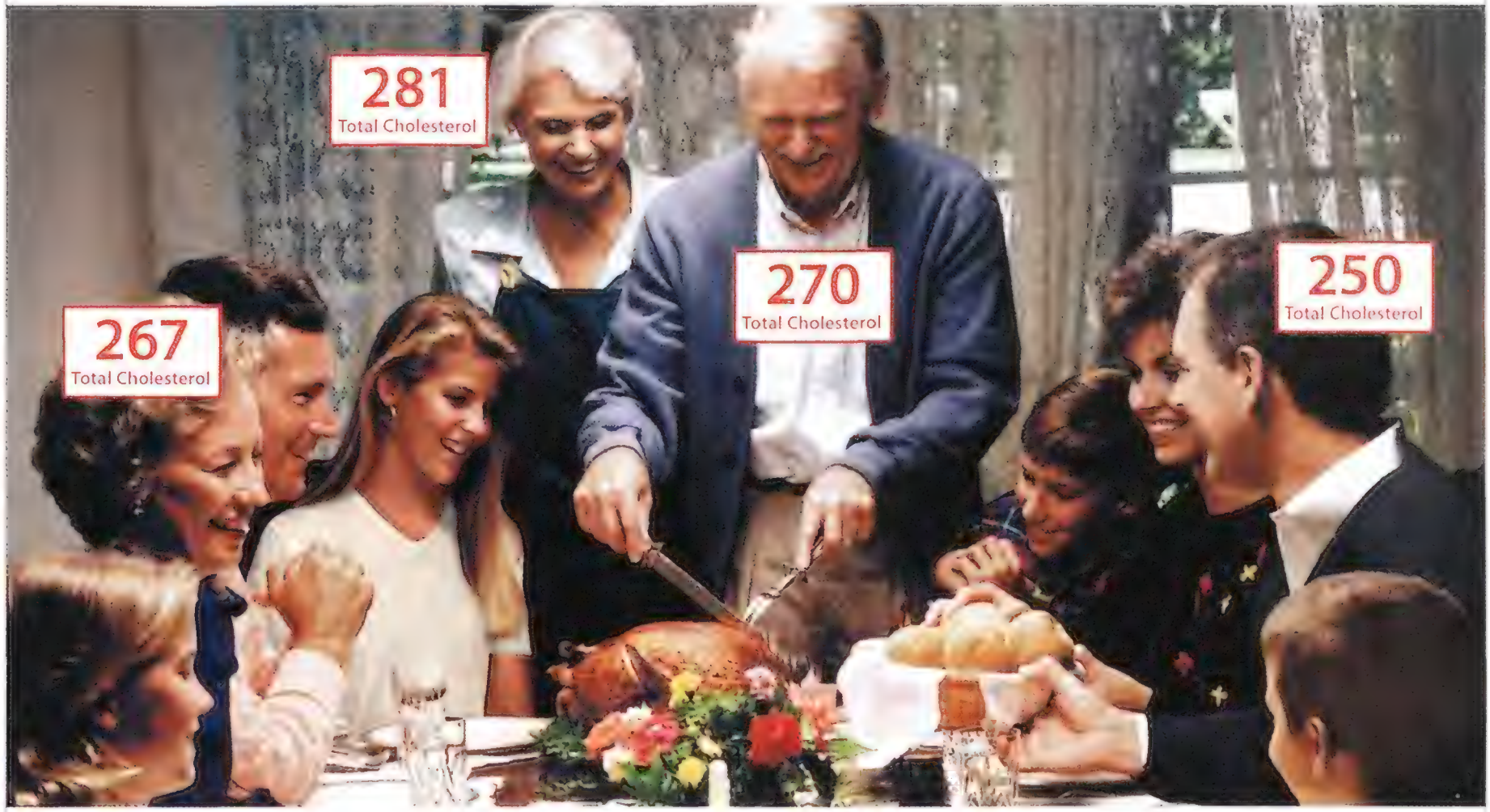
We'll be installing more than 200 aircraft in the aviation hangar in the next several years, and we'll install some 135 artifacts in the space hangar adjacent to it. What's already in place is thrilling enough. As you enter the aviation hangar, you're brought face to face with the imposing SR-71 Blackbird spy plane, and the space shuttle *Enterprise* looms in the distance behind it. The history of aviation does precisely what it should in this expanse: it takes wing. Dozens of craft grace the area, some on the floor, others suspended from monumental steel trusses, in positions that reflect their characteristic attitudes in use—the wings of a P-40 Warhawk angled for attack, a Jungmeister turned upside down in a virtuoso roll. Here are the Dash 80, prototype of the 707, the jet that would transform commercial air travel, and a Concorde.

The center will house more than 200 aircraft.

The Dash 80 is angled toward the nearby B-29 *Enola Gay*, which, after years of restoration work, looks as it did the day of its mission to Hiroshima. In the juxtaposition of the two aircraft, two eras meet, each with a legacy of momentous consequence. No engine in the great room makes a sound, and yet it's impossible not to hear a whole century's worth of roar and buzz and whine. Impossible, too, not to keep the imagination from taking a turn at the controls—as it did for Steven Udvar-Hazy—and ruling no destination out of reach.

Lawrence M. Small
SECRETARY OF THE SMITHSONIAN INSTITUTION

Some family traditions we can live without.



Take high cholesterol. Anyone can have it. Here's something else you might not know. About one-fifth of your cholesterol comes from what you eat. That's because high cholesterol often has as much to do with family genes as food. So, even if you diet and exercise you may need some help to lower it. The good news is that adding LIPITOR can help. It can lower your total cholesterol 29% to 45%*. And it can lower your bad cholesterol 39% to 60%*. (*The average effect depends on the dose.) Ask your doctor if it's right for you. Of all cholesterol medicines, doctors prescribe LIPITOR the most. Learn more. Call us at 1-888-LIPITOR or find us on the web at www.lipitor.com.

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Important information:

LIPITOR® (atorvastatin calcium) is a prescription drug used with diet to lower cholesterol. LIPITOR is not for everyone, including those with liver disease or possible liver problems, women who are nursing, pregnant, or may become pregnant. LIPITOR has not been shown to prevent heart disease or heart attacks.

If you take LIPITOR, tell your doctor about any unusual muscle pain or weakness. This could be a sign of serious side effects. It is important to tell your doctor about any medications you are currently taking to avoid possible serious drug interactions. Your doctor may do simple blood tests to monitor liver function before and during drug treatment. The most commonly reported side effects are gas, constipation, stomach pain and indigestion. They are usually mild and tend to go away.

Please see additional important information on next page.

LIPITOR® (Atorvastatin Calcium) Tablets

Brief Summary of Prescribing Information

CONTRAINDICATIONS: Active liver disease or unexplained persistent elevations of serum transaminases. Hypersensitivity to any component of this medication. **Pregnancy and Lactation** — Atherosclerosis is a chronic process and discontinuation of lipid-lowering drugs during pregnancy should have little impact on the outcome of long-term therapy of primary hypercholesterolemia. Cholesterol and other products of cholesterol biosynthesis are essential components for fetal development (including synthesis of steroids and cell membranes). Since HMG-CoA reductase inhibitors decrease cholesterol synthesis and possibly the synthesis of other biologically active substances derived from cholesterol, they may cause fetal harm when administered to pregnant women. Therefore, HMG-CoA reductase inhibitors are contraindicated during pregnancy and in nursing mothers. ATORVASTATIN SHOULD BE ADMINISTERED TO WOMEN OF CHILDBEARING AGE ONLY WHEN SUCH PATIENTS ARE HIGHLY UNLIKELY TO CONCEIVE AND HAVE BEEN INFORMED OF THE POTENTIAL HAZARDS. If the patient becomes pregnant while taking this drug, therapy should be discontinued and the patient apprised of the potential hazard to the fetus.

WARNINGS: Liver Dysfunction — HMG-CoA reductase inhibitors, like some other lipid-lowering therapies, have been associated with biochemical abnormalities of liver function. **Persistent elevations (>3 times the upper limit of normal [ULN] occurring on 2 or more occasions) in serum transaminases occurred in 0.7% of patients who received atorvastatin in clinical trials. The incidence of these abnormalities was 0.2%, 0.2%, 0.6%, and 2.3% for 10, 20, 40, and 80 mg, respectively.** One patient in clinical trials developed jaundice. Increases in liver function tests (LFT) in other patients were not associated with jaundice or other clinical signs or symptoms. Upon dose reduction, drug interruption, or discontinuation, transaminase levels returned to or near pretreatment levels without sequelae. Eighteen of 30 patients with persistent LFT elevations continued treatment with a reduced dose of atorvastatin. **It is recommended that liver function tests be performed prior to and at 12 weeks following both the initiation of therapy and any elevation of dose, and periodically (eg, semiannually) thereafter.** Liver enzyme changes generally occur in the first 3 months of treatment with atorvastatin. Patients who develop increased transaminase levels should be monitored until the abnormalities resolve. Should an increase in ALT or AST of >3 times ULN persist, reduction of dose or withdrawal of atorvastatin is recommended. Atorvastatin should be used with caution in patients who consume substantial quantities of alcohol and/or have a history of liver disease. Active liver disease or unexplained persistent transaminase elevations are contraindications to the use of atorvastatin (see CONTRAINDICATIONS). **Skeletal Muscle — Rare cases of rhabdomyolysis with acute renal failure secondary to myoglobinuria have been reported with atorvastatin and with other drugs in this class.** Uncomplicated myalgia has been reported in atorvastatin-treated patients (see ADVERSE REACTIONS). Myopathy, defined as muscle aches or muscle weakness in conjunction with increases in creatine phosphokinase (CPK) values >10 times ULN, should be considered in any patient with diffuse myalgias, muscle tenderness or weakness, and/or marked elevation of CPK. Patients should be advised to report promptly unexplained muscle pain, tenderness or weakness, particularly if accompanied by malaise or fever. Atorvastatin therapy should be discontinued if markedly elevated CPK levels occur or myopathy is diagnosed or suspected. The risk of myopathy during treatment with drugs in this class is increased with concurrent administration of cyclosporine, fibric acid derivatives, erythromycin, niacin, or azole antifungals. Physicians considering combined therapy with atorvastatin and fibric acid derivatives, erythromycin, immunosuppressive drugs, azole antifungals, or lipid-lowering doses of niacin should carefully weigh the potential benefits and risks and should carefully monitor patients for any signs or symptoms of muscle pain, tenderness, or weakness, particularly during the initial months of therapy and during any periods of upward dosage titration of either drug. Periodic creatine phosphokinase (CPK) determinations may be considered in such situations, but there is no assurance that such monitoring will prevent the occurrence of severe myopathy. **Atorvastatin therapy should be temporarily withheld or discontinued in any patient with an acute, serious condition suggestive of a myopathy or having a risk factor predisposing to the development of renal failure secondary to rhabdomyolysis (eg, severe acute infection, hypotension, major surgery, trauma, severe metabolic, endocrine and electrolyte disorders, and uncontrolled seizures).**

PRECAUTIONS: General — Before instituting therapy with atorvastatin, an attempt should be made to control hypercholesterolemia with appropriate diet, exercise, and weight reduction in obese patients, and to treat other underlying medical problems (see INDICATIONS AND USAGE in full prescribing information). **Information for Patients** — Patients should be advised to report promptly unexplained muscle pain, tenderness, or weakness, particularly if accompanied by malaise or fever. **Drug Interactions** — The risk of myopathy during treatment with drugs of this class is increased with concurrent administration of cyclosporine, fibric acid derivatives, niacin (nicotinic acid), erythromycin, azole antifungals (see WARNINGS, Skeletal Muscle). ***Antacid:*** When atorvastatin and Maalox® TC suspension were coadministered, plasma concentrations of atorvastatin decreased approximately 35%. However, LDL-C reduction was not altered. ***Antipyrine:*** Because atorvastatin does not affect the pharmacokinetics of antipyrine, interactions with other drugs metabolized via the same cytochrome isozymes are not expected. ***Colestipol:*** Plasma concentrations of atorvastatin decreased approximately 25% when colestipol and atorvastatin were coadministered. However, LDL-C reduction was greater when atorvastatin and colestipol were coadministered than when either drug was given alone. ***Cimetidine:*** Atorvastatin plasma concentrations and LDL-C reduction were not altered by coadministration of cimetidine. ***Digoxin:*** When multiple doses of atorvastatin and digoxin were coadministered, steady-state plasma digoxin concentrations increased by approximately 20%. Patients taking digoxin should be monitored appropriately. ***Erythromycin:*** In healthy individuals, plasma concentrations of atorvastatin increased approximately 40% with coadministration of atorvastatin and erythromycin, a known inhibitor of cytochrome P450 3A4 (see WARNINGS, Skeletal Muscle). ***Oral Contraceptives:*** Coadministration of atorvastatin and an oral contraceptive increased AUC values for norethindrone and ethinyl estradiol by approximately 30% and 20%. These increases should be considered when selecting an oral contraceptive for a woman taking atorvastatin. ***Warfarin:*** Atorvastatin had no clinically significant effect on prothrombin time when administered to patients receiving chronic warfarin treatment. **Endocrine Function** — HMG-CoA reductase inhibitors interfere with cholesterol synthesis and theoretically might blunt adrenal and/or gonadal steroid production. Clinical studies have shown that atorvastatin does not reduce basal plasma cortisol concentration or impair adrenal reserve. The effects of HMG-CoA reductase inhibitors on male fertility have not been studied in adequate numbers of patients. The effects, if any, on the pituitary-gonadal axis in premenopausal women are unknown. Caution should be exercised if an HMG-CoA reductase inhibitor is administered concomitantly with drugs that may decrease the levels or activity of endogenous steroid hormones, such as ketoconazole, spironolactone, and cimetidine. **CNS Toxicity** — Brain hemorrhage was seen in a female dog treated for 3 months at 120 mg/kg/day. Brain hemorrhage and optic nerve vacuolation were seen in another female dog that was sacrificed in moribund condition after 11 weeks of escalating doses up to 280 mg/kg/day. The 120 mg/kg dose resulted in a systemic exposure approximately 16 times the human plasma area-under-the-curve (AUC, 0-24 hours) based on the maximum human dose of 80 mg/day. A single tonic convulsion was seen in each of 2 male dogs (one treated at 10 mg/kg/day and one at 120 mg/kg/day) in a 2-year study. No CNS lesions have been observed in mice after chronic treatment for up to 2 years at doses up to 400 mg/kg/day or in rats at doses up to 100 mg/kg/day. These doses were 6 to 11 times (mouse) and 8 to 16 times (rat) the human AUC (0-24) based on the maximum recommended human dose of 80 mg/day. CNS vascular lesions, characterized by perivascular hemorrhages, edema, and mononuclear cell infiltration of perivascular spaces, have been observed in dogs treated with other members of this class. A chemically similar drug in this class produced optic nerve degeneration (Wallerian degeneration of retinogeniculate fibers) in clinically normal dogs in a dose-dependent fashion at a dose that produced plasma drug levels about 30 times higher than the mean drug level in humans taking the highest recommended dose. **Carcinogenesis, Mutagenesis, Impairment of Fertility** — In a 2-year carcinogenicity study in rats at dose levels of 10, 30, and 100 mg/kg/day, 2 rare tumors were found in muscle in high-dose females: in one, there was a rhabdomyosarcoma and, in another, there was a fibrosarcoma. This dose represents a plasma AUC (0-24) value of approximately 16 times the mean human plasma drug exposure after an 80 mg oral dose. A 2-year carcinogenicity study in mice given 100, 200, or 400 mg/kg/day resulted in a significant increase in liver adenomas in high-dose males and liver carcinomas in high-dose females. These findings occurred at plasma AUC (0-24) values of approximately 6 times the mean human plasma drug exposure after an 80 mg oral dose. *In vitro,* atorvastatin was not mutagenic or clastogenic in the following tests with and without metabolic activation: the Ames test with *Salmonella typhimurium* and *Escherichia coli,* the HGPRT forward mutation assay in Chinese hamster lung cells, and the chromosomal aberration assay in Chinese hamster lung cells. Atorvastatin was negative in the *in vivo* mouse micronucleus test. Studies in rats performed at doses up to 175 mg/kg (15 times the human exposure) produced no changes in fertility. There was aplasia and aspermia in the epididymis of 2 of 10 rats treated with 100 mg/kg/day of atorvastatin for 3 months (16 times the human AUC at the 80 mg dose); testis weights were significantly lower at 30 and 100 mg/kg and epididymal weight was lower at 100 mg/kg. Male rats given 100 mg/kg/day for 11 weeks prior to mating had decreased sperm motility, spermatid head concentration, and increased abnormal sperm. Atorvastatin caused no adverse effects on semen parameters, or reproductive organ histopathology in dogs given doses of 10, 40, or 120 mg/kg for two years. **Pregnancy — Pregnancy Category X: See CONTRAINDICATIONS.** Safety in pregnant women has not been established. Atorvastatin crosses the rat placenta and reaches a level in fetal liver equivalent to that of maternal plasma. Atorvastatin was not teratogenic in rats at doses up to 300 mg/kg/day or in rabbits at doses up to 100 mg/kg/day. These doses resulted in multiples of about 30 times (rat) or 20 times (rabbit) the human exposure based on surface area (mg/m^2). In a study in rats given 20, 100, or 225 mg/kg/day, from gestation day 7 through to lactation day 21 (weaning), there was decreased pup survival at birth, neonate, weaning, and maturity in pups of mothers dosed with 225 mg/kg/day. Body weight was decreased on days 4 and 21 in pups of mothers dosed at 100 mg/kg/day; pup body weight was decreased at birth and at days 4, 21, and 91 at 225 mg/kg/day. Pup development was delayed (rotorod performance at 100 mg/kg/day and acoustic startle at 225 mg/kg/day; pinnae detachment and eye opening at 225 mg/kg/day). These doses correspond to 6 times (100 mg/kg) and 22 times (225 mg/kg) the human AUC at 80 mg/day. Rare reports of congenital anomalies have been received following intrauterine exposure to HMG-CoA reductase inhibitors. There has been one report of severe congenital bony deformity, tracheo-esophageal fistula, and anal atresia (VATER association) in a baby born to a woman who took lovastatin with dextroamphetamine sulfate during the first trimester of pregnancy. LIPITOR should be administered to women of child-bearing potential only when such patients are highly unlikely to conceive and have been informed of the potential hazards. If the woman becomes pregnant while taking LIPITOR, it should be discontinued and the patient advised again as to the potential hazards to the fetus. **Nursing Mothers** — Nursing rat pups had plasma and liver drug levels of 50% and 40%, respectively, of that in their mother's milk. Because of the potential for adverse reactions in nursing infants, women taking LIPITOR should not breast-feed (see CONTRAINDICATIONS). **Pediatric Use** — Safety and effectiveness in patients 10-17 years of age with heterozygous familial hypercholesterolemia have been evaluated in controlled clinical trials of 6 months duration in adolescent boys and postmenarchal girls. Patients treated with LIPITOR had an adverse experience profile generally similar to that of patients treated with placebo, the most common adverse experiences observed in both groups, regardless of causality assessment, were infections. **Doses greater than 20 mg have not been studied in this patient population.** In this limited controlled study, there was no detectable effect on growth or sexual maturation in boys or on menstrual cycle length in girls. See CLINICAL PHARMACOLOGY, *Clinical Studies section* in full prescribing information; ADVERSE REACTIONS, *Pediatric Patients*; and DOSAGE AND ADMINISTRATION, *Pediatric patients (10-17 years of age) with Heterozygous Familial Hypercholesterolemia* in full prescribing information. Adolescent females should be counseled on appropriate contraceptive methods while on LIPITOR therapy (see CONTRAINDICATIONS and PRECAUTIONS, *Pregnancy*). **LIPITOR has not been studied in controlled clinical trials involving pre-pubertal patients or patients younger than 10 years of age.** Clinical efficacy with doses up to 80 mg/day for 1 year have been evaluated in an uncontrolled study of patients with homozygous FH including 8 pediatric patients. See CLINICAL PHARMACOLOGY, *Clinical Studies in Homozygous Familial Hypercholesterolemia* in full prescribing information. **Geriatric Use** — The safety and efficacy of atorvastatin (10-80 mg) in the geriatric population (≥65 years of age) was evaluated in the ACCESS study. In this 54-week open-label trial 1,958 patients initiated therapy with atorvastatin 10 mg. Of these, 835 were elderly (≥65 years) and 1,123 were non-elderly. The mean change in LDL-C from baseline after 6 weeks of treatment with atorvastatin 10 mg was -38.2% in the elderly patients versus -34.6% in the non-elderly group. The rates of discontinuation due to adverse events were similar between the two age groups. There were no differences in clinically relevant laboratory abnormalities between the age groups.

ADVERSE REACTIONS: LIPITOR is generally well-tolerated. Adverse reactions have usually been mild and transient. In controlled clinical studies of 2502 patients, <2% of patients were discontinued due to adverse experiences attributable to atorvastatin. The most frequent adverse events thought to be related to atorvastatin were constipation, flatulence, dyspepsia, and abdominal pain. **Clinical Adverse Experiences** — Adverse experiences reported in ≥2% of patients in placebo-controlled clinical studies of atorvastatin, regardless of causality assessment, are shown in the following table.

Adverse Events in Placebo-Controlled Studies (% of Patients)

BODY SYSTEM Adverse Event	Placebo N = 270	Atorvastatin 10 mg N = 863	Atorvastatin 20 mg N = 36	Atorvastatin 40 mg N = 79	Atorvastatin 80 mg N = 94
BODY AS A WHOLE					
Infection	10.0	10.3	2.8	10.1	7.4
Headache	7.0	5.4	16.7	2.5	6.4
Accidental Injury	3.7	4.2	0.0	1.3	3.2
Flu Syndrome	1.9	2.2	0.0	2.5	3.2
Abdominal Pain	0.7	2.8	0.0	3.8	2.1
Back Pain	3.0	2.8	0.0	3.8	1.1
Allergic Reaction	2.6	0.9	2.8	1.3	0.0
Asthenia	1.9	2.2	0.0	3.8	0.0
DIGESTIVE SYSTEM					
Constipation	1.8	2.1	0.0	2.5	1.1
Diarrhea	1.5	2.7	0.0	3.8	5.3
Dyspepsia	4.1	2.3	2.8	1.3	2.1
Flatulence	3.3	2.1	2.8	1.3	1.1
RESPIRATORY SYSTEM					
Sinusitis	2.6	2.8	0.0	2.5	6.4
Pharyngitis	1.5	2.5	0.0	1.3	2.1
SKIN AND APPENDAGES					
Rash	0.7	3.9	2.8	3.8	1.1
MUSCULOSKELETAL SYSTEM					
Arthralgia	1.5	2.0	0.0	5.1	0.0
Myalgia	1.1	3.2	5.6	1.3	0.0

The following adverse events were reported, regardless of causality assessment in patients treated with atorvastatin in clinical trials. The events in italics occurred in ≥2% of patients and the events in plain type occurred in <2% of patients.

Body as a Whole: *Chest pain,* face edema, fever, neck rigidity, malaise, photosensitivity reaction, generalized edema. ***Digestive System:*** *Nausea,* gastroenteritis, liver function tests abnormal, colitis, vomiting, gastritis, dry mouth, rectal hemorrhage, esophagitis, eructation, glossitis, mouth ulceration, anorexia, increased appetite, stomatitis, biliary pain, cheilitis, duodenal ulcer, dysphagia, enteritis, melena, gum hemorrhage, stomach ulcer, tenesmus, ulcerative stomatitis, hepatitis, pancreatitis, cholestatic jaundice. ***Respiratory System:*** *Bronchitis, rhinitis,* pneumonia, dyspnea, asthma, epistaxis. ***Nervous System:*** *Insomnia, dizziness,* paresthesia, somnolence, amnesia, abnormal dreams, libido decreased, emotional lability, incoordination, peripheral neuropathy, torticollis, facial paralysis, hyperkinesia, depression, hypesthesia, hypertonia. ***Musculoskeletal System:*** *Arthritis,* leg cramps, bursitis, tenosynovitis, myasthenia, tendinous contracture, myositis. ***Skin and Appendages:*** Pruritus, contact dermatitis, alopecia, dry skin, sweating, acne, urticaria, eczema, seborrhea, skin ulcer. ***Urogenital System:*** *Urinary tract infection,* urinary frequency, cystitis, hematuria, impotence, dysuria, kidney calculus, nocturia, epididymitis, fibrocystic breast, vaginal hemorrhage, albuminuria, breast enlargement, metrorrhagia, nephritis, urinary incontinence, urinary retention, urinary urgency, abnormal ejaculation, uterine hemorrhage. ***Special Senses:*** Amblyopia, tinnitus, dry eyes, refraction disorder, eye hemorrhage, deafness, glaucoma, parosmia, taste loss, taste perversion. ***Cardiovascular System:*** Palpitation, vasodilatation, syncope, migraine, postural hypotension, phlebitis, arrhythmia, angina pectoris, hypertension. ***Metabolic and Nutritional Disorders:*** *Peripheral edema,* hyperglycemia, creatine phosphokinase increased, gout, weight gain, hypoglycemia. ***Hemic and Lymphatic System:*** Ecchymosis, anemia, lymphadenopathy, thrombocytopenia, petechia. **Postintroduction Reports** — Adverse events associated with LIPITOR therapy reported since market introduction, that are not listed above, regardless of causality assessment, include the following: anaphylaxis, angioneurotic edema, bullous rashes (including erythema multiforme, Stevens-Johnson syndrome, and toxic epidermal necrolysis), and rhabdomyolysis. **Pediatric Patients (ages 10-17 years)** In a 26-week controlled study in boys and postmenarchal girls (n=140), the safety and tolerability profile of LIPITOR 10 to 20 mg daily was generally similar to that of placebo (see CLINICAL PHARMACOLOGY, *Clinical Studies section* in full prescribing information and PRECAUTIONS, *Pediatric Use*).

OVERDOSAGE: There is no specific treatment for atorvastatin overdosage. In the event of an overdose, the patient should be treated symptomatically, and supportive measures instituted as required. Due to extensive drug binding to plasma proteins, hemodialysis is not expected to significantly enhance atorvastatin clearance.

Please see full prescribing information for additional information about LIPITOR.

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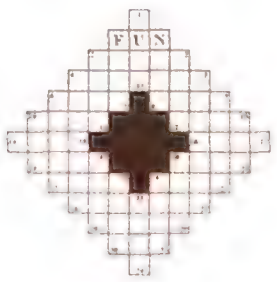
THIS MONTH IN HISTORY

DECEMBER ANNIVERSARIES—MOMENTOUS OR MERELY MEMORABLE

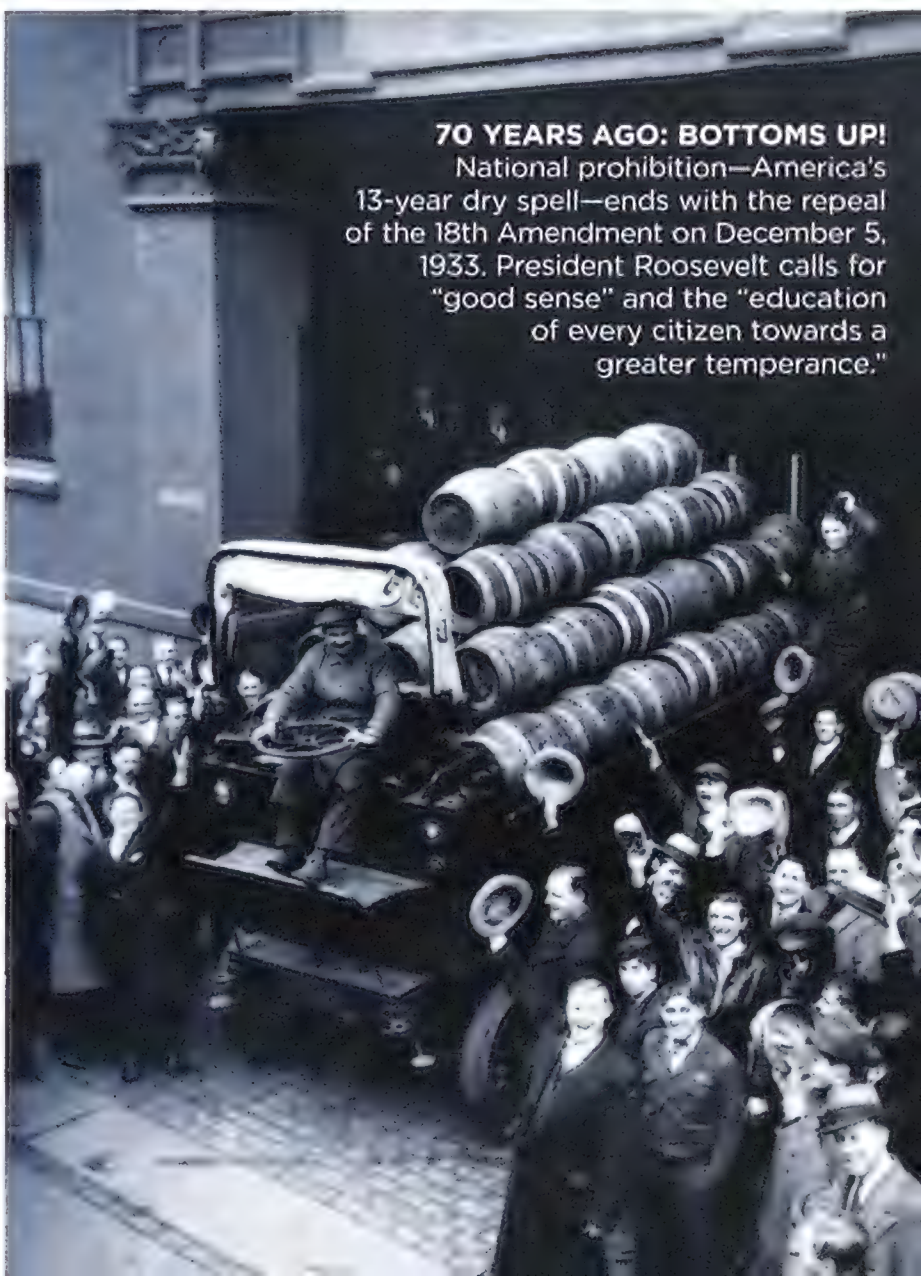
150 YEARS AGO: FINISHING TOUCH
U.S. minister to Mexico James Gadsden and Mexican president Antonio López de Santa Anna sign the Gadsden Purchase December 30, 1853, in Mexico City. The treaty gives the United States 29,000 square miles, in what is now New Mexico and Arizona, for $10 million, finalizing the U.S.-Mexican border. And with that, the familiar outline of today's lower 48 is complete.

350 YEARS AGO: ROUNDHEAD RULER
Oliver Cromwell becomes Lord Protector of England, Scotland and Ireland in 1653. The victorious leader of parliamentary forces against King Charles I's army rules for five years before dying in 1658. After Charles II's restoration in 1660, Cromwell's body is exhumed, hanged and beheaded.

90 YEARS AGO: IT'S A PUZZLEMENT
The first published crossword puzzle appears December 21, 1913, in the New York *World*. Englishman Arthur Wynne's numbered grid gives readers such clues as a seven-letter word for daydream (reverie) and has no black squares. Today computers often write the puzzles, but nothing says smart like solving one in ink.



100 YEARS AGO: GLOWING SUCCESS
Marie and Pierre Curie share the 1903 Nobel Prize in Physics for their research into the radioactive elements polonium and radium. Pierre is killed in 1906, but Marie Curie will win an unprecedented second Nobel in 1911. She dies of leukemia in 1934.



70 YEARS AGO: BOTTOMS UP!
National prohibition—America's 13-year dry spell—ends with the repeal of the 18th Amendment on December 5, 1933. President Roosevelt calls for "good sense" and the "education of every citizen towards a greater temperance."

100 YEARS AGO: CONED
Ice cream has been an American favorite since the Revolution, but not until 1903 does New York vendor Italo Marchiony patent the first mold for edible holders for the treat. The ice-cream cone is a winner—Americans now eat at least two billion a year. ○

ALISON McLEAN

LETTERS

Readers respond to the October issue:

DUBAI DEVELOPMENT

THE TOLERANCE that Dubai is said to exhibit for other cultures ("Dazzling Dubai") is, in my opinion, subverted by its extreme materialism. Instead of admiring Dubai's achievements, I see a society devoted to exploring and exploiting the sensual pleasures of the very rich, where social responsibility means making sure the tourists and big spenders have a good time and don't look down any dark alleys. It is a developer's dream.

RODGER LEWIS
RAWFORDVILLE, FLORIDA

THE INFORMATIVE article by Ken Ringle didn't mention Zayed University's campus in Dubai, which the United Arab Emirates established in 1998 and which enrolls women only. The economic engine that is Dubai depends not only on investment dollars but also on investment in the people who will power that engine, including women.

EDWARD J. KORMANDY
LOS ANGELES, CALIFORNIA

LAST WORD ON OBITS

READING RICHARD CONNIFF'S article about obituary writers ("Dead Lines"), I was reminded of my favorite death notice, which appeared in London's *Spectator,* the world's longest continually published magazine. (It was founded in 1828.) A famously bibulous columnist, Jeffrey Bernard, would occasionally prove incapable of writing his column, "Low Life," and in its place there would appear a notice, "Jeffrey Bernard is unwell." When he died in 1997 at age 65, the notice was, "Jeffrey Bernard is very unwell." All's well that ends, er, unwell: the columnist was the inspiration for the play *Jeffrey Bernard Is Unwell*, by Keith Waterhouse.

JASON WILLIAMS
TAKOMA PARK, MARYLAND

ANOTHER NOTE for the obituary files concerns H. L. Mencken, the renowned curmudgeon, author and longtime *Baltimore Sun* journalist. Late in his life, it was suggested to him that his obituary file, prepared in advance and undoubtedly containing references to his diatribes against the "booboisie" and the many sacred cows he happily desecrated, be brought up to date. But he reportedly demurred, saying "Leave it as it is, just add one line: As he grew older, he grew worse."

ETHELWYN BOWEN
AWASSEE, GEORGIA

In fact, we are told by the Friends of the H. L. Mencken House, in Baltimore, that Mencken had requested that the Sun *print only a brief announcement of his death with no biographical sketch or portrait. Of course, the newspaper had the last word and published a long obituary, a large photograph, an extended reminiscence by the editor in chief and an appreciative editorial. —Ed.*

STANLEY'S SHORTCOMINGS

"STANLEY MEETS LIVINGSTONE" almost grudgingly acknowledges that Stanley "besmirched his reputation by accepting money from King Leopold II of Belgium to help create the Congo Free State"—as if accepting money were the worst of his moral shortcomings. Stanley was physically fearless but also sadistic and racist. What happened in the Congo [under Leopold, millions of indigenous people were killed or died of starvation, disease or forced labor] has been described as a genocide of Holocaust proportions. It's impossible for me to believe that anyone who learns about its details can come away unchanged.

MARVIN T. PROSONO
SOUTHWEST MISSOURI STATE UNIVERSITY
SPRINGFIELD, MISSOURI

BLAIR'S BRAVERY

PETER STOTHARD'S FAWNING over the "brave" Tony Blair, the U.K.'s prime minister ("Tony Blair Goes to War"), seems like propaganda. A year ago, Blair told Parliament: "Saddam Hussein's weapons of mass destruction programme is active, detailed and growing. The policy of containment is not working. The weapons of mass destruction programme is not shut down. It is up and running now." Every word of that statement was false.

ALEXANDER EASTERBROOK

IT IS ALWAYS useful to put aside the partisan acrimony over issues like Iraq and try to understand the values and human qualities of our leaders and the pressures exerted on them. The portrayal of Blair did just that.

ROBERT J. HALL

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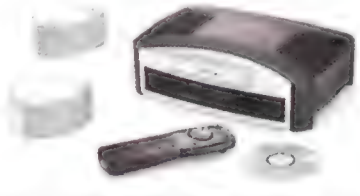

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Too Hot to Handle

Taken at the start of his multifaceted career, Gordon Parks' photograph of a Washington, D.C. worker was so inflammatory it was buried for decades – BY PAUL TRACHTMAN

Gordon Parks has called this 1942 photograph of Ella Watson "unsubtle." Long stashed away, it is now recognized as a bold and influential statement on race at mid-century.

WHEN GORDON PARKS arrived in Washington, D.C. in 1942, he was 29 years old, with a past defined by his black skin and a future in his camera bag. He was starting out as a professional photographer, and his first shot was *American Gothic, Washington, D.C.*, the now famous portrait of cleaning lady Ella Watson holding a mop and a broom and standing in front of an American flag. The image, still a favorite of Parks' six decades later, has been ranked as one of the most influential photographs of the century.

Parks, one of 15 children, was born into poverty in Fort Scott, Kansas, and came of age in Minneapolis, sleeping in streetcars and playing piano in a brothel. While he was working as a waiter on a train, a picture magazine sparked his interest in photography. He bought a camera at a pawnshop for $12.50 and took pictures of, as he recalls, "anything that came in front of my lens." The first rolls of film he developed, at a local Eastman Kodak store, were so strong the manager exhibited the prints. Parks then photographed black people in the Midwest during the Depression, from tenement dwellers to churchgoers in their Sunday best to the wife of boxing great Joe Louis. An exhibit of his pictures in Chicago in 1941 earned him a job at the Farm Security Administration (FSA) in Washington, where a host of soon-to-be renowned photographers, including Dorothea Lange, Walker Evans, Carl Mydans and Ben Shahn, were at work.

The FSA photographers and their hard-driving boss, Roy Stryker, were documenting the lives of farmers and

"Why did you bring your camera down here?" Stryker asked.

workers displaced by the nation's economic collapse. Stryker, greeting Parks for the first time, sized up his latest recruit. "I didn't know much about Washington," Parks, now 91, recalled recently. "So he gave me my first assignment. I was not to take a camera out. I was to go to a big department store downtown and buy a topcoat, go from there across the street and have lunch and then see a motion picture. And he wanted me to give him a report on it."

The day was emblazoned on Parks' memory: he was refused at all those places. "How did it go?" Stryker asked him when he returned to the office.

"I think you know how it went," Parks said.

"Yeah, I think I do," Stryker said. "What are you going to do about it?"

"What can I do about it?"

"Well, why did you bring your camera down here?" Stryker said, adding, "Talk to some older black people who have suffered all their lives what you suffered today."

Writer-composer-filmmaker Parks (below, in 2000 at age 89) has photographed the gamut (a fashion model, 1961).

Parks says he approached someone in the FSA building, "a black charwoman by the name of Ella Watson, who was sweeping the floor and mopping. So I introduced myself and asked her if she would talk to me a little bit, and she did, and when she got through telling me all the woes in her family, I asked her: 'Would you pose for me?' "

"In this outfit?" she said.

Parks knew Grant Wood's 1930 painting, *American Gothic*, of a farmer, holding a pitchfork, and his daughter. The young photographer arranged Watson in a similar tableau.

When Stryker saw the photograph, he told Parks, "You've got the right idea, but you're going to get us all fired!" The agency's work publicizing the plight of African-Americans in the South was already riling some Southern conservatives. So Stryker filed the picture away. Parks took more FSA pictures of Watson—at home, with her adopted daughter and grandchildren—before he lost touch with her.

He went on to a career as a photographer (at *Vogue* and also *Life*, where I worked with him in the 1960s) before he won further acclaim as an author, composer, painter and filmmaker (1971's *Shaft!*).

Some three decades after taking *American Gothic*, as Parks remembers it today, he picked up a newspaper on an airplane and was shocked to see the photograph. "I took a flight down to Washington and went to the FSA archives," he says. "A black kid was taking care of the files, and he sneaked me in and got me the negative." Stryker (who died in 1975) "didn't destroy it," Parks continues. "But it was tucked down at the bottom, I'll tell you that!"

In 1997, a few of Ella Watson's grown grandchildren delighted Parks by showing up at a retrospective exhibition of his work at Washington's Corcoran Gallery of Art. The gallery's senior photography curator, Philip Brookman, says Parks has an unusual "ability to connect with people across the divides—rich and poor, black and white—and to translate these moments into memorable visual icons."

Parks, who lives in Manhattan, is still painting and writing—he just published *The Sun Stalker*, a novel about 19th-century English landscape painter J.M.W. Turner—and he remains passionate about taking photographs. His work lives up to a vision I heard him express more than three decades ago, as we talked shop in the *Life* photographer's lounge with staff photographers Alfred Eisenstaedt and Eliot Elisofon.

"I don't like to work with assistants," Eisenstaedt said, "because I am already one too many. It would be better if the camera could work itself, operated by an invisible hand."

Elisofon said, "The ideal would be to push the film in one ear, blink your eye, and take the film out the other ear."

Parks saw it differently. "Rather than have the film run through my ears," he said, "I'd prefer to have it run through my heart, and see what happens." ○

A former SMITHSONIAN *editor,* PAUL TRACHTMAN *is a frequent contributor.*

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"People are a little amazed when they see the shop," says Skeletons in the Closet senior clerk Salene Limon, with a skull card holder.

Little Shop Around the Coroner

The Los Angeles County morgue sells ghoulish souvenirs for a good cause ~ BY KEVIN RODERICK

GIFT SHOPS AND I don't usually get along. They want my money, and I want to be amused by something I haven't seen a hundred times. This is not a problem at Skeletons in the Closet, an emporium of one-of-a-kind items designed to tickle my funny bone. Good thing, given the surroundings. This souvenir shop is upstairs from the Los Angeles County morgue, and such close proximity to several hundred bodies, even unseen, can be creepy. So it's just as well there's some whimsy mixed in with the merchandise.

There is the $18 garment bag that looks like a body bag. Red toe tags identical to those in use downstairs cost $5 with your name imprinted on them. Boxer shorts, called Undertakers, are covered with miniature depictions of the chalk outline that the police sometimes draw around splayed bodies at crime scenes. After perusing the T-shirts, jackets and sweats with a similar theme, customers who feel torn about actually buying might be nudged by a slogan on one of the store's catalogs: "Part of you thinks it's in poor taste—Part of you wants an XL."

Skeletons in the Closet goes after yucks, but the store itself is no joke. It's the official gift shop of the Los Angeles County Office of Coroner, staffed by department clerks and sanctioned by the elected board of supervisors for the nation's most populous county. Started by employees ten years ago in a closet (hence the name), the lark has turned lucrative,

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ringing up some $300,000 in sales last year without spending a penny on advertising.

Walk-ins are encouraged, but signs are prohibited because overt commercialism might offend family members who come to the morgue to identify a loved one. Located four miles and two freeways east of downtown, the shop is secreted in a corner of the sprawling Los Angeles County-USC Medical Center complex.

Once inside the lobby, I'm buzzed through a locked door, and a clerk nods toward an old elevator that groans its way up to the second floor. Halfway down a dimly lit office corridor, a small sign verifies that Skeletons in the Closet is no urban legend.

Silliness is evident at once. Pasted on the door is a warning to shoplifters: "Next of Kin Will be Notified." Below, a note advises check writers to use their dental records in lieu of the usual forms of identification. Inside the 15-by-20-foot room, tables display small items: refrigerator magnets, lapel pins, toe tags and notepads bearing the shop's trademarked body outline logos or the words "L.A. County Coroner." Beach towels, T-shirts and weatherproof windbreakers all featuring the chalk outline fill shelves along the wall. (One windbreaker design has been discontinued; too many customers were using it to gain admittance to actual crime scenes.) Computer mouse pads carry the teaser "We're dying for your business."

I have the shop to myself, but I'm told about a dozen patrons a day find their way up here. Some have come to the morgue on official business—detectives, paramedics, doctors—but most are civilians. On the day I was there, recent drop-ins had come from as far as Des Moines, Boston, Toronto, Alvin, Texas, and Chelsea, Alabama.

"Last week someone was here from Italy," says Salene Limon, the store's senior clerk, who dispenses her business cards from the spring-loaded jaw of a small plastic skull on her corner desk. Summer is peak time, with many of the customers making the rounds of celebrity death sites in Los Angeles,

One windbreaker design has been discontinued; too many customers were using it to gain admittance to actual crime scenes.

Visitors "like it or hate it," says Hazlett.

such as the Ambassador Hotel, where Robert F. Kennedy was assassinated, the Chateau Marmont, where John Belushi overdosed, and the nightclub on Sunset Strip where River Phoenix expired on the sidewalk.

The concept for the shop took hold in the early 1990s when the coroner's staff began selling "L.A. County Coroner" coffee mugs and T-shirts at industry conferences, then to employees and their families. "Once the public started seeing the T-shirts, the phone calls rolled in," says James Hazlett, the store's marketing analyst. In 1993, the closet expanded to a converted office.

Former chief medical examiner Thomas Noguchi, known as the Coroner to the Stars, built the department's cachet as the morgue for the famous through his handling of autopsies of Kennedy, Belushi, Marilyn Monroe, Janis Joplin and Natalie Wood, among others. His headline-grabbing style made Noguchi the best-known coroner in the country and inspired the outspoken character played by Jack Klugman on the 1970s TV series "Quincy." Noguchi's 1983 memoir, *Coroner*, became a bestseller.

Not surprisingly, Christmas is the busiest season, with an uptick around Halloween. In 1996, a Japanese retailer spent $30,000 at the shop. The Web is the next frontier. The site, at www.lacoroner.com, features an animated skeleton that seems more appropriate to Saturday morning TV cartoons than a morgue. Browse on Boo-verly Hills Drive or Pacific Ghost Highway.

"People who come in here either like it or they hate it," says Hazlett. By using the Internet and pursuing a teenage market (the "skater crowd," as he puts it), he predicts sales of $1 million by 2006. He's adding new products: his first shipment of body logo beanie caps was snatched up by staff.

Profits from the shop support a county court program that sentences drunk drivers to shock-therapy visits to the morgue. On a recent Saturday morning, 21 mostly young offenders—some accompanied by a parent—watched a gruesome video about alcohol-caused traffic accidents, then recited the details of their crimes to the group. Though having to confess clearly upset some of the young offenders, most seemed more agitated about touring the morgue itself. Lt. David Smith handed out disposable gloves and paper bootees and masks to protect against bacteria. "It won't help with the smell—just breathe through your mouth," he advised a pale teenager.

Several autopsies were under way as the line shuffled tentatively past corpses in plastic wrap; clearly, youthful bravado had yielded to the sight of lifeless bodies. "It gets to them. It works," Smith told me after the tour. Suddenly, the oldest of the group, a man in his 50s, ran back from the parking lot through a beating rain. Is it true, he asked, that there is a gift shop? He'd like to take home a souvenir. ○

KEVIN RODERICK is the author of The San Fernando Valley: America's Suburb.

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WHEN ZOCOR SHOULD NOT BE USED

Some people should not take ZOCOR. Discuss this with your doctor.

ZOCOR should not be used by patients who are allergic to any of its ingredients. In addition to the active ingredient simvastatin, each tablet contains the following inactive ingredients: cellulose, lactose, magnesium stearate, iron oxides, talc, titanium dioxide, and starch. Butylated hydroxyanisole is added as a preservative.

Patients with liver problems: ZOCOR should not be used by patients with active liver disease or repeated blood test results indicating possible liver problems. (See WARNINGS.)

Women who are or may become pregnant: Pregnant women should not take ZOCOR because it may harm the fetus. **Women of childbearing age should not take ZOCOR unless it is highly unlikely that they will become pregnant.** If a woman does become pregnant while on ZOCOR, she should stop taking the drug and talk to her doctor at once.

Women who are breast-feeding should not take ZOCOR.

WARNINGS

Muscle: Tell your doctor right away if you experience any unexplained muscle pain, tenderness, or weakness at any time during treatment with ZOCOR so your doctor can decide if ZOCOR should be stopped. Some patients may have muscle pain or weakness while taking ZOCOR. Rarely, this can include muscle breakdown resulting in kidney damage. The risk of muscle breakdown is greater in patients taking certain other drugs along with ZOCOR:

- **Cyclosporine, itraconazole, ketoconazole, erythromycin, clarithromycin, HIV protease inhibitors, the antidepressant nefazodone, or large quantities of grapefruit juice (>1 quart daily), particularly with higher doses of ZOCOR.**
- **Gemfibrozil, other fibrates, or lipid-lowering doses (≥1 g/day) of niacin, particularly with higher doses of ZOCOR.**
- **Amiodarone or verapamil with higher doses of ZOCOR.**

The risk of muscle breakdown is greater at higher doses of simvastatin.

Because the risk of muscle side effects is greater when ZOCOR is used with the products listed above, the combined use of these products should be avoided unless your doctor determines the benefits are likely to outweigh the increased risks.

If your doctor determines that the benefits of combined use of ZOCOR with gemfibrozil, other fibrates, or niacin likely outweigh the increased risk of muscle problems, the dose of ZOCOR should not exceed 10 mg daily. No more than 10 mg/day of ZOCOR should be taken with cyclosporine.

The combined use of verapamil or amiodarone with doses above ZOCOR 20 mg should be avoided unless your doctor determines the benefits outweigh the increased risk of muscle breakdown.

Your doctor should also carefully monitor for any muscle pain, tenderness, or weakness, particularly during the initial months of therapy and if the dose of either drug is increased. Your doctor also may monitor the level of certain muscle enzymes in your body, but there is no assurance that such monitoring will prevent the occurrence of severe muscle disease.

The risk of muscle breakdown is greater in patients with kidney problems or diabetes.

If you have conditions that can increase your risk of muscle breakdown, which in turn can cause kidney damage, your doctor should temporarily withhold or stop ZOCOR. Also, since there are no known adverse consequences of briefly stopping therapy with ZOCOR, treatment should be stopped a few days before elective major surgery and when any major acute medical or surgical condition occurs. Discuss this with your doctor, who can explain these conditions to you.

Liver: About 1% of patients who took ZOCOR in clinical trials developed elevated levels of some liver enzymes. Patients who had these increases usually had no symptoms. Elevated liver enzymes usually returned to normal levels when therapy with ZOCOR was stopped.

In the ZOCOR Survival Study, the number of patients with more than 1 liver enzyme level elevation to greater than 3 times the normal upper limit was no different between the ZOCOR and placebo groups. Only 8 patients on ZOCOR and 5 on placebo discontinued therapy due to elevated liver enzyme levels. Patients were started on 20 mg of ZOCOR, and one third had their dose raised to 40 mg.

Your doctor should perform routine blood tests to check these enzymes before you start treatment with ZOCOR and thereafter when clinically indicated. Patients titrated to the 80-mg dose should receive an additional test at 3 months and periodically thereafter (eg, semiannually) for the first year of treatment. If your enzyme levels increase, your doctor should order more frequent tests. If your liver enzyme levels remain unusually high, your doctor should discontinue your medication.

Tell your doctor about any liver disease you may have had in the past and about how much alcohol you consume. ZOCOR should be used with caution in patients who consume large amounts of alcohol.

PRECAUTIONS

Drug Interactions: Because of possible serious drug interactions, it is important to tell your doctor what other drugs you are taking, including those obtained without a prescription. You should also tell other doctors who are prescribing a new medicine for you that you are taking ZOCOR. ZOCOR can interact with the following:

- Itraconazole
- Ketoconazole
- Erythromycin
- Clarithromycin
- HIV protease inhibitors
- Nefazodone
- Cyclosporine
- Large quantities of grapefruit juice (>1 quart daily)

The risk of myopathy is also increased by the following lipid-lowering drugs that can cause myopathy when given alone:

- Gemfibrozil
- Other fibrates
- Niacin (nicotinic acid) (≥1 g/day)

The risk of muscle breakdown is increased with other drugs:

- Amiodarone
- Verapamil

Some patients taking lipid-lowering agents similar to ZOCOR® (simvastatin) and coumarin anticoagulants (a type of blood thinner) have experienced bleeding and/or increased blood clotting time. Patients taking these medicines should have their blood tested before starting therapy with ZOCOR and should continue to be monitored.

Central Nervous System Toxicity; Cancer, Mutations, Impairment of Fertility: Like most prescription drugs, ZOCOR was required to be tested on animals before it was marketed for human use. Often these tests were designed to achieve higher drug concentrations than humans achieve at recommended dosing. In some tests, the animals had damage to the nerves in the central nervous system. In studies of mice with high doses of ZOCOR, the likelihood of certain types of cancerous tumors increased. No evidence of mutations of or damage to genetic material has been seen. In 1 study with ZOCOR, there was decreased fertility in male rats.

Pregnancy: Pregnant women should not take ZOCOR because it may harm the fetus.

Safety in pregnancy has not been established. In studies with lipid-lowering agents similar to ZOCOR, there have been rare reports of birth defects of the skeleton and digestive system. Therefore, women of childbearing age should not take ZOCOR unless it is highly unlikely they will become pregnant. If a woman does become pregnant while taking ZOCOR, she should stop taking the drug and talk to her doctor at once. The active ingredient of ZOCOR did not cause birth defects in rats at 3 times the human dose or in rabbits at 3 times the human dose.

Nursing Mothers: Drugs taken by nursing mothers may be present in their breast milk. Because of the potential for serious adverse reactions in nursing infants, a woman taking ZOCOR should not breast-feed. (See WHEN ZOCOR SHOULD NOT BE USED.)

Pediatric Use: ZOCOR is not recommended for children or patients under 10 years of age.

Geriatric Use: *Higher blood levels of active drug were seen in elderly patients (70–78 years of age) compared with younger patients (18–30 years of age) in 1 study.* In other studies, the cholesterol-lowering effects of ZOCOR were at least as great in elderly patients as in younger patients, and there were no overall differences in safety between elderly and younger patients over the 20–80 mg/day dosage range. Of the 7 cases of myopathy/rhabdomyolysis among 10,269 patients on ZOCOR in another study, 4 were [illegible] (at baseline), 1 of whom was over 75.

SIDE EFFECTS

Most patients tolerate treatment with ZOCOR well; however, like all prescription drugs, ZOCOR can cause side effects, and some of them can be serious. Side effects that do occur are usually mild and short-lived. Only your doctor can weigh the risks versus the benefits of any prescription drug. In clinical studies with ZOCOR less than 1.5% of patients dropped out of the studies because of side effects. In 2 large, 5-year studies, patients taking ZOCOR experienced similar side effects to those patients taking placebo (sugar pills). Some of the side effects that have been reported with ZOCOR or related drugs are listed below. This list is not complete. Be sure to ask your doctor about side effects before taking ZOCOR and to discuss [illegible].

Digestive System: Constipation, diarrhea, upset stomach, gas, heartburn, stomach pain/cramps, anorexia, loss of appetite, nausea, inflammation of the pancreas, hepatitis, jaundice, fatty changes in the liver, and rarely, severe liver damage and failure, cirrhosis, and liver cancer.

Muscle, Skeletal: Muscle cramps, aches, pain, and weakness; joint pain; muscle breakdown.

Nervous System: Dizziness, headache, insomnia, tingling, memory loss, damage to nerves causing weakness and/or loss of sensation and/or abnormal sensations, anxiety, depression, tremor, loss of balance, psychic disturbances.

Skin: Rash, itching, hair loss, dryness, nodules, discoloration.

Eye/Senses: Blurred vision, altered taste sensation, progression of cataracts, eye muscle [illegible].

Hypersensitivity (Allergic) Reactions: On rare occasions, a wide variety of symptoms have been reported to occur either alone or together in groups (referred to as a syndrome) that [illegible] allergic-type reactions, which may rarely be fatal. These have included 1 or more of the following: a generalized reaction that may include shortness of breath, wheezing, digestive symptoms, [illegible], pressure and even shock; an allergic reaction with swelling of the face, lips, tongue, [illegible], swallowing or breathing; symptoms mimicking lupus (a disorder in which a [illegible] attack parts of his or her own body); severe muscle and blood vessel inflammation; [illegible], bruises; various disorders of blood cells (that could result in anemia, infection, [illegible] or abnormal blood tests; inflamed or painful joints; hives; fatigue and weakness; [illegible], chills; flushing; difficulty breathing; and severe skin disorders that vary from [illegible] shedding of skin all over the body, including mucous membranes such as the [illegible].

Other: Loss of sexual desire, breast enlargement, impotence.

Laboratory Tests: Liver function test abnormalities including elevated alkaline phosphatase and bilirubin; thyroid function abnormalities.

NOTE: This summary provides important information about ZOCOR. If you would like more information, ask your doctor or pharmacist to let you read the prescribing information and then discuss it with them.

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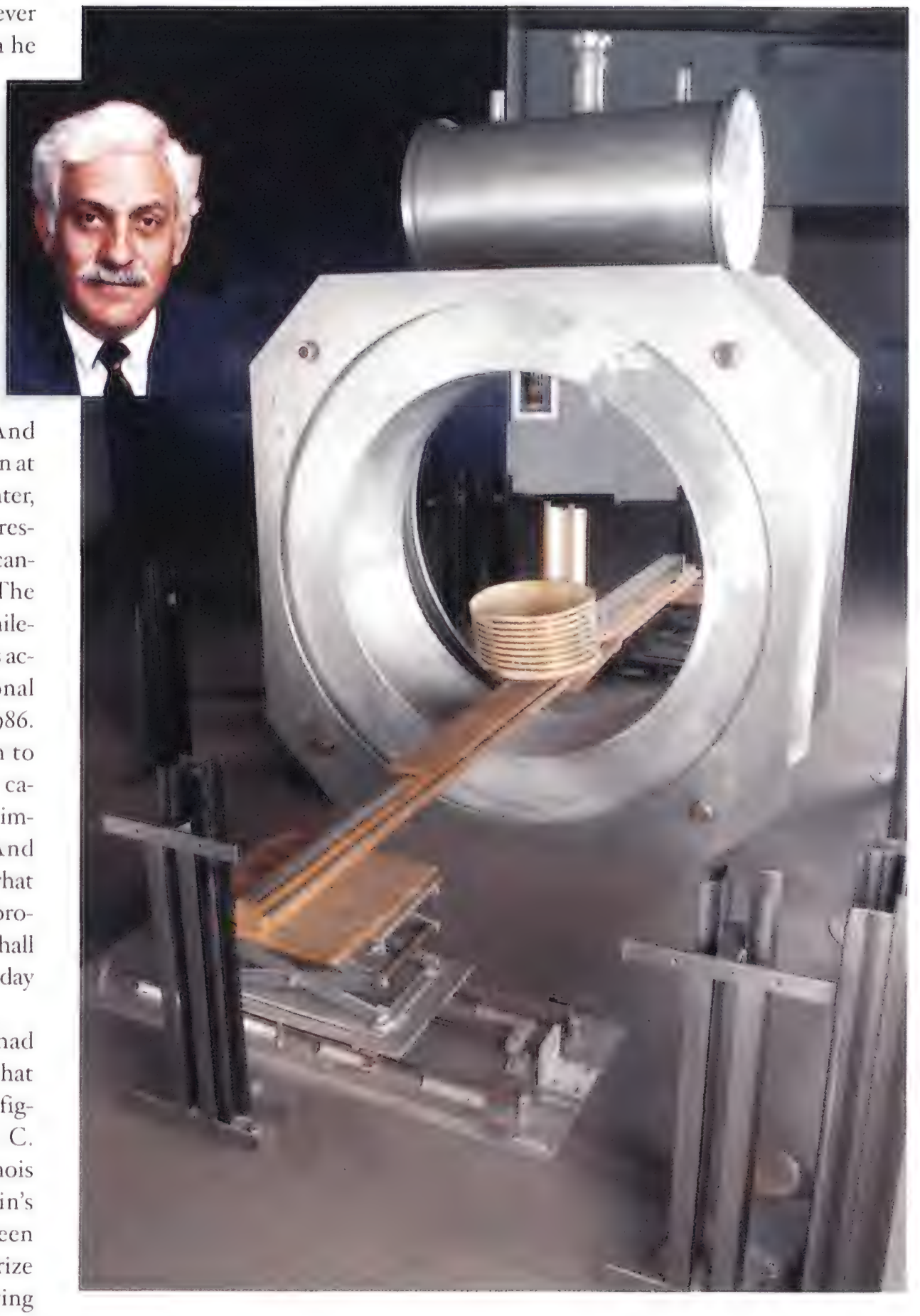
Prize Fight

Raymond Damadian refuses to take his failure to win a Nobel Prize, for a prototype MRI machine, lying down ~ BY RICK WEISS

RAYMOND DAMADIAN says he'll never forget that day in June 1970 when he drove from his New York laboratory—his car trunk jammed with cages of cancerous rats—to a little town near Pittsburgh. He was heading for an obscure company, NMR Specialties, to test an idea: that a nascent technology involving intense magnetic fields and radio waves could be used to differentiate between rodents with cancer and those without.

The experiment worked. And Damadian, a physician-scientist then at Brooklyn's Downstate Medical Center, went on to build the first magnetic resonance imaging machine, an MRI scanner he nicknamed Indomitable. The machine, which would become a milestone artifact of medical history, was acquired by the Smithsonian National Museum of American History in 1986. Millions of patients would go on to benefit from this new technology's capacity to create astonishingly sharp images of the body's soft tissues. And Damadian appeared embarked on what many perceived to be an inevitable progression toward the famed concert hall in Stockholm where he would someday be awarded a Nobel Prize.

This year, it seemed, his time had come. Rumors began to circulate that he—along with two other central figures in MRI development, Paul C. Lauterbur of the University of Illinois and Sir Peter Mansfield of Britain's University of Nottingham—had been nominated for the coveted Nobel Prize in Physiology or Medicine. Knowing that the winners would be announced on the Web in the predawn hours of



Damadian (inset), who built the first MRI scanner (above), believes his breakthrough was crucial. To deny him a Nobel Prize, he contends, constitutes a "shameful wrong."

In one case, the prize given for science was just plain wrong.

October 6, Damadian rose early and logged on. The Nobel Web site flashed blue and gold on his monitor, but Damadian saw only red. Lauterbur and Mansfield were to share the award and its $1.3 million. Damadian's name was nowhere to be found.

Thus erupted the most recent, and quite possibly the most high-profile, disagreement in a long series of spats that have periodically attended the Nobel since the first of the prizes was awarded in 1901. In the past, many scientists have quietly grumbled that they were inexcusably overlooked by the Nobel committee. Damadian, however, upped the ante considerably, buying full-page advertisements in the *Washington Post*, the *New York Times* and the *Los Angeles Times* to protest the decision. He also mounted a letter-writing campaign directed at Stockholm and aimed at correcting what he called "this shameful wrong."

The achievements of Charles Best (top left), who helped discover insulin, and Oswald Avery (top right, at far left), who elucidated the role of DNA in heredity, were overlooked. Rosalind Franklin (bottom, left) died four years before colleagues Watson and Crick won the Nobel; the prize is not given posthumously. The work of Johannes Fibiger (bottom, right), who won the Nobel for medicine in 1926, was later repudiated.

No one denies that Damadian conducted pioneering work in the field of MRI. He was the first, in 1977, to use the technology to visualize the organs of a live human subject—after practicing on rat livers and a kosher turkey. (The human volunteer was Damadian's colleague, Larry Minkoff; Damadian himself had a bit more body fat than little Indomitable could penetrate.) Furthermore, Damadian's central patent on the technology, awarded in 1974, was affirmed by the Supreme Court in 1997. In that dispute, Damadian and the company he founded, Melville, New York-based FONAR Corporation, won more than $128 million in patent infringement penalties from MRI goliath General Electric.

What is also clear, however, is that it was Lauterbur and Mansfield who made the system medically practicable. With the two recipients remaining silent on the matter, and the Nobel Assembly bound by its rules to keep details of deliberations secret for 50 years, it is difficult to know how to weigh the relative significance of Damadian's claims. One thing is certain: in the past, the Nobel committee has proved itself something less than infallible.

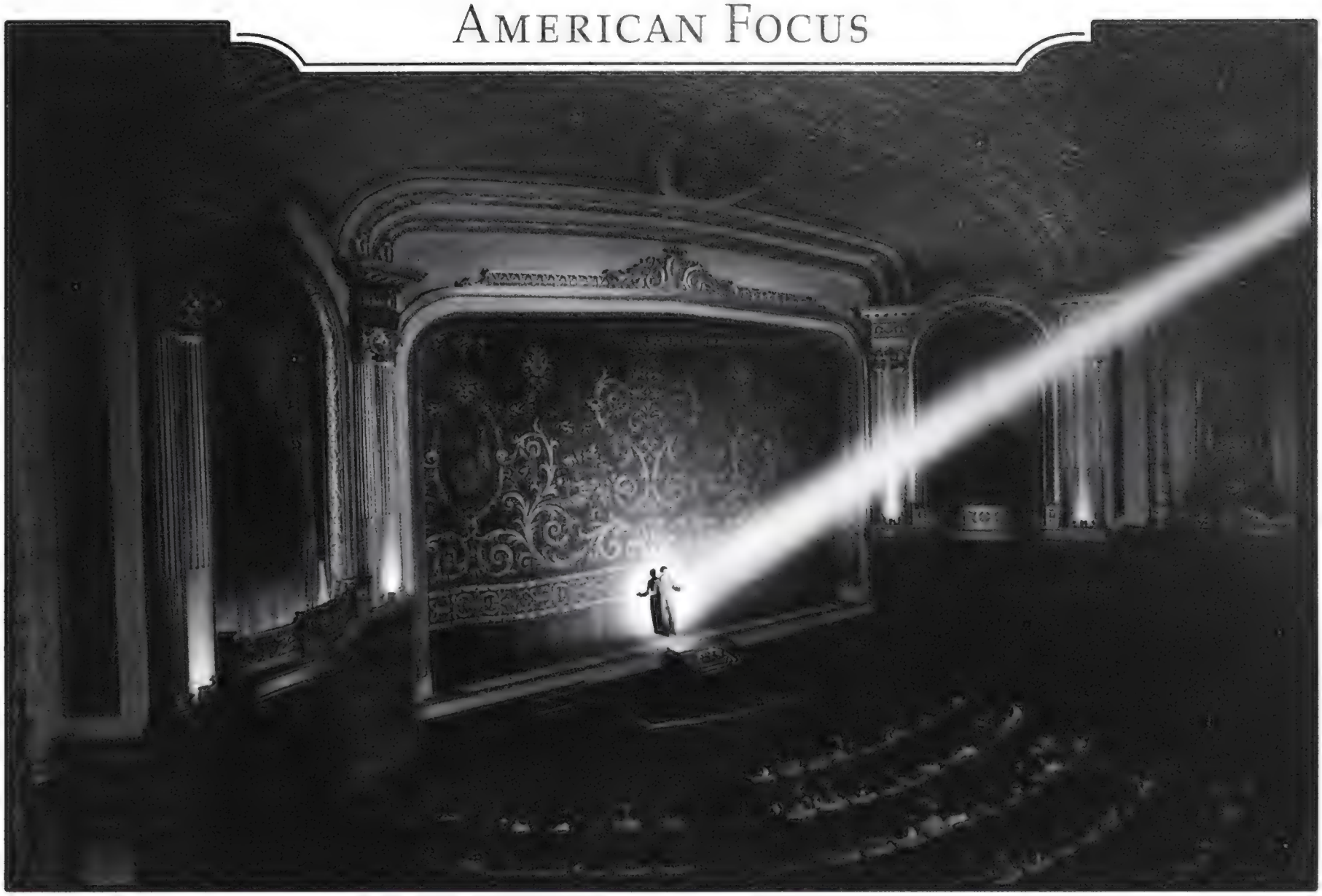
In some cases, disputes developed only decades after the award was made—and only with the unfair advantage of hindsight. Many Nobel watchers, for example, today cringe at the decision, made in 1949, to award the prize to Portuguese neurologist Egas Moniz, who pioneered the "prefrontal leukotomy"—later called a lobotomy. The procedure was used—and in retrospect greatly overused—as a treatment for a wide range of psychiatric disorders. The previous year, a Nobel had gone to Paul Hermann Müller for his discovery of dichlorodiphenyltrichloroethane, or DDT. The pesticide, which killed insects that spread typhus and malaria, was almost certainly instrumental in saving millions of lives. But today, rightly or wrongly, it is remembered primarily for the terrible toll its use has taken on birds, fish and other wildlife.

In at least one case, the prize given for science was just plain wrong. In 1926, Danish biologist Johannes A.G. Fibiger was awarded a Nobel for his discovery that a tiny round parasite, *Spiroptera neoplastica*, was the cause of stomach cancer in rats. Scientists later concluded that most of Fibiger's laboratory rats died of tumors caused by a vitamin deficiency; it was 40 years before a chagrined Nobel Assembly dared again to award the prize for cancer research.

In other instances, complaints that the Nobel Assembly had made a mistake reflect the public's unfamiliarity with the foundation's rules. One common misperception, for example, holds that the prize awarded to James Watson, Francis Crick and Maurice Wilkins in 1962 should have gone also to Rosalind Franklin, the colleague who succeeded in making a crucial X-ray image of crystallized DNA. That photograph allowed Watson and Crick to deduce the structure of the double helix. But Franklin had been dead for four years by the time that prize was bestowed; Nobels cannot be awarded posthumously.

Other candidates, however, have been passed over inexplicably and almost certainly unfairly. Many scientists believe that the most egregious omission occurred in the 1940s, when the assembly overlooked Oswald T. Avery, who discovered that DNA is the chemical responsible for the transmission of inherited traits. No one disputes that it was Avery whose experiments with bacteria, published in 1944, proved this

American Focus



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The Nobel decision, Damadian believes, was no mere oversight.

crucial truth. He was repeatedly nominated for the prize—every year from 1945 until his death ten years later. But a number of scientists at the time resisted the notion of DNA's centrality, and he never won.

The case that is perhaps most reminiscent of this year's controversy was the 1923 award to Frederick G. Banting and John J. R. Macleod for their discovery of insulin in 1922. Although Macleod was department head at the University of Toronto where the work was done, he was not even in residence on campus when the seminal experiments were conducted. It was Banting and medical student Charles Best, in collaboration with biochemist James B. Collip, who actually slogged through the science. So strongly did Banting feel about Best's contribution that he shared half of his Nobel winnings with the young collaborator. Perhaps inspired by Banting's magnanimity, Macleod split his monetary award with Collip.

No such collegial solution appears on the horizon for this year's contestants. Indeed, to hear Damadian tell it, he and Lauterbur have been at odds for years; the Nobel decision, Damadian believes, was no mere oversight. He claims that an intense lobbying campaign, conducted by the winners and their supporters, resulted in Damadian's exclusion.

Hans Jornvall, secretary of the Nobel Assembly, counters that lobbying plays no role in the process. And, truth be told, less sinister explanations for the decision do exist; chief among them is that science is a cumulative, communal process. Research is rarely punctuated by clear-cut breakthroughs or heroic individual feats. The more one scrutinizes scientific progress, the more gradual the process seems and the more arbitrary decisions regarding prizes, such as the Nobel, appear. In order for Damadian's technology to become clinically useful, it absolutely had to be improved upon by Lauterbur and Mansfield. And in the continuum from

Nobel secretary Hans Jornvall announced medicine prize winners Paul C. Lauterbur and Sir Peter Mansfield October 6, 2003.

basic physics to early prototype to modern medical imaging, it may be that the Nobel Assembly simply felt more comfortable drawing the line beginning at point B rather than point A.

But it is difficult not to at least consider another explanation: that scientists on the assembly or in other positions of influence could not abide Damadian's staunch support for "creationist science." Damadian is a firm believer in a literal translation of the Bible: he has no doubt that the earth was created by God during a six-day stretch about 6,000 years ago. Damadian has also served as a technical adviser to the Institute for Creation Research, which rejects the standard model of evolution."The non-biblical account would have us believe that all life originated from a single common ancestor—a slime mold—and give or take a billion years, we're expected to believe that the descendants of this slime mold climbed out of the ocean and stood up and started giving lectures," Damadian says. "Do the math on that. The sheer statistics of that violate any sense of reality."

Asked if he thinks that his beliefs, which take aim at what is arguably the core guiding principle of modern biology, may explain his fate in the Nobel race, Damadian shrugs. "I have no way of knowing," he says. "Nobody has ever raised it. Maybe they're too polite."

It's an admirably neutral view, considering all the fire and brimstone that Damadian has loosed upon the Nobel decision. For years, creationist Web sites have touted Damadian as a respectable scientist supporting their cause. It is tempting to speculate that some assembly members might have weighed the additional legitimacy a Nobel imprimatur would have conferred upon groups whose views are so diametrically opposed to so much of modern science.

Whether Damadian's religious beliefs influenced the Nobel Assembly or not—"Definitely not," Jornvall says—those views clearly dominate Damadian's own perception of how this debate will end. Indeed, if there is one thing he is more sure of than that he deserves a Nobel Prize, it is that terrible justice will surely be visited upon those who, as he sees it, denied him his proper place in history.

"I'm not their judge," Damadian says of Lauterbur and Mansfield, "but I'm confident there is one. And I don't think they want to be explaining to that judge—the final judge—how they conspired to exclude the person they know started this."

There is no wrath, it seems, like that of a spurned Nobelist who believes he has both science and religion on his side. Perhaps there's a Peace Prize awaiting the person who can settle this one. ○

RICK WEISS writes about science and medicine for the Washington Post.

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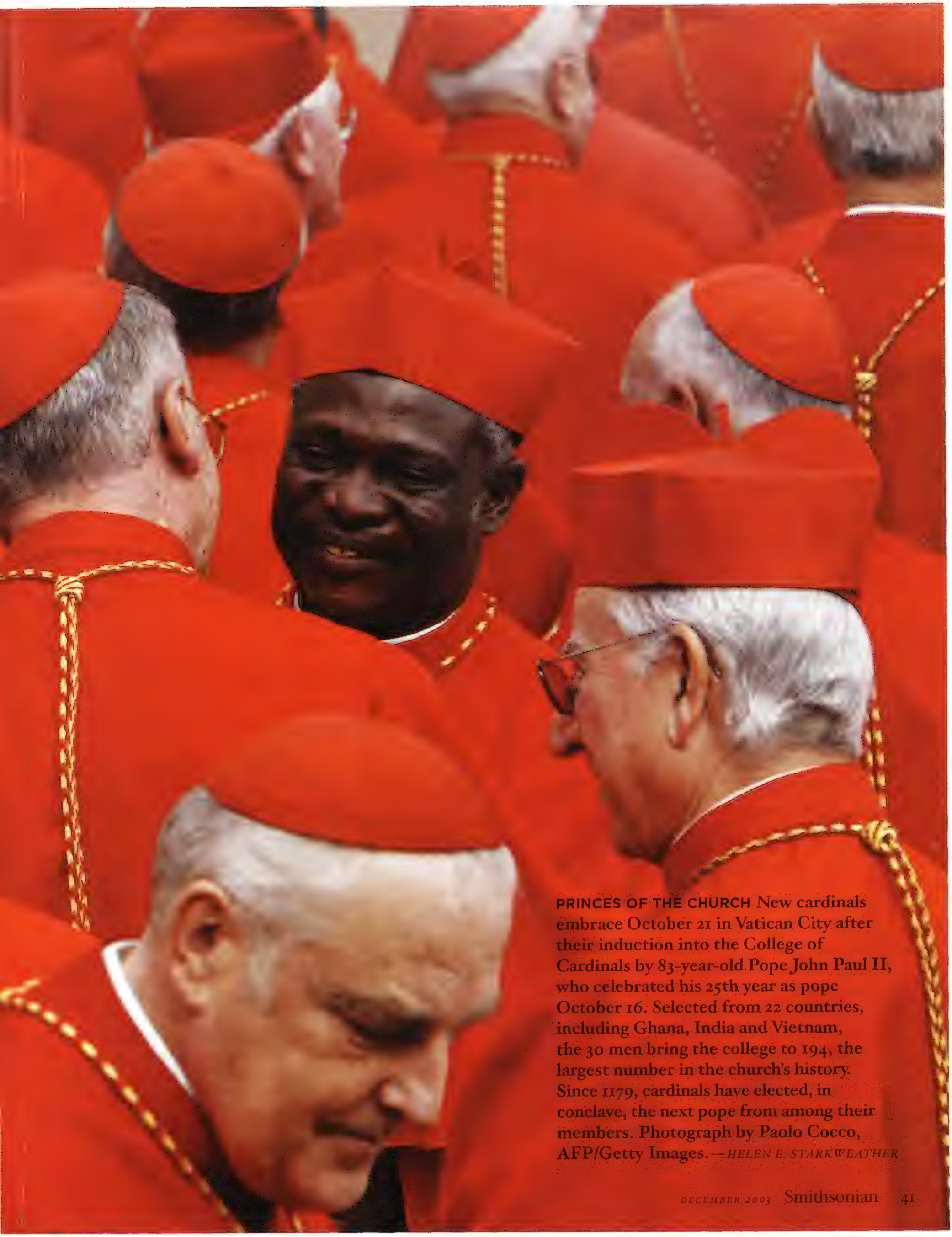


PRINCES OF THE CHURCH New cardinals embrace October 21 in Vatican City after their induction into the College of Cardinals by 83-year-old Pope John Paul II, who celebrated his 25th year as pope October 16. Selected from 22 countries, including Ghana, India and Vietnam, the 30 men bring the college to 194, the largest number in the church's history. Since 1179, cardinals have elected, in conclave, the next pope from among their members. Photograph by Paolo Cocco, AFP/Getty Images. —*HELEN E. STARKWEATHER*

Lewis Gets His Marching Orders

Jefferson spells out the mission

Over the next several months SMITHSONIAN plans to run excerpts from the journals of the members of the Corps of Discovery, better known as the Lewis and Clark expedition, and other documents. We begin this month with Jefferson's June 20, 1803, directive to Meriwether Lewis outlining the president's goals for the expedition. We've kept his sometimes unique spelling and punctuation; brackets indicate words or phrases that Jefferson, for whatever reason, deleted on the manuscript.

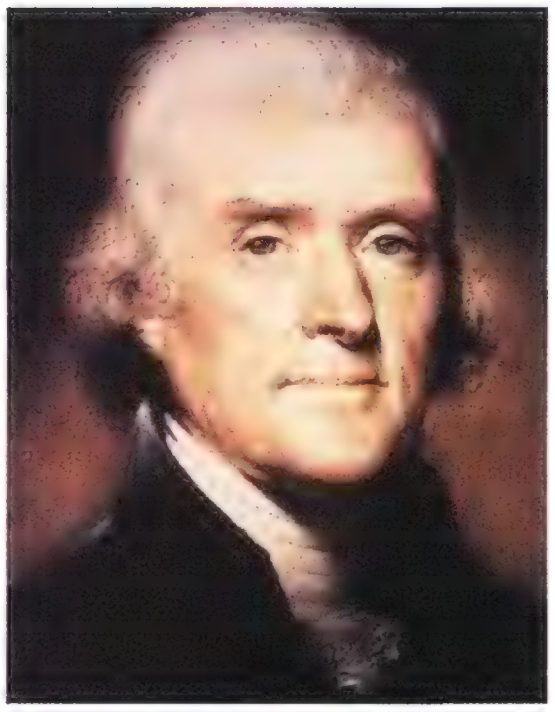
To Captain Meriwether Lewis esq. Capt. of the 1st regimt. of Infantry of the U.S. of A.

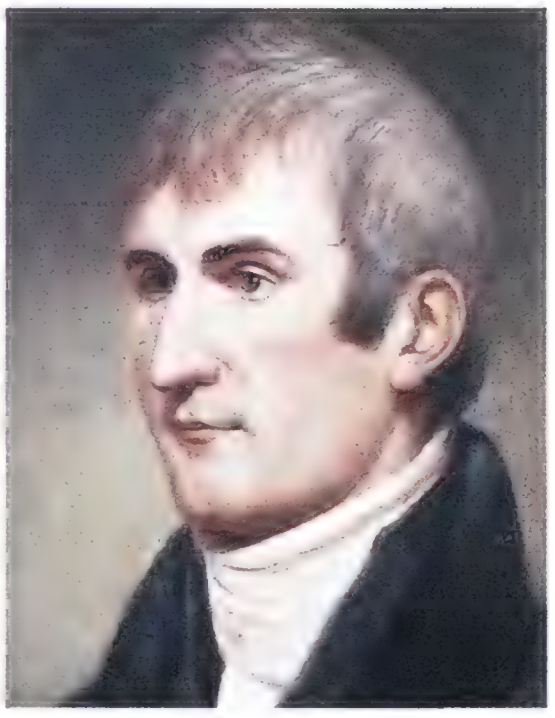
The object of your mission is to explore the Missouri river, & such principal stream of it, as, by it's course and communication with the waters of the Pacific ocean, whether the Columbia, Oregan, Colorado or any other river may offer the most direct & practicable water communication across this continent for the purposes of commerce.

Beginning at the mouth of the Missouri, you will take [careful] observations of latitude & longitude, at all remarkeable points on the river, & especially at the mouths of rivers, at rapids, at islands, & other places & objects distinguished by such natural marks & characters of a durable kind, as that they may with certainty be recognised hereafter. . . .

The interesting points of the portage between the heads of the Missouri, & of the water offering the best communication with the Pacific ocean, should also be fixed by observation, & the course of that water to the ocean, in the same manner as that of the Missouri.

Your observations are to be taken with great pains & accuracy, to be entered distinctly & intelligibly for others as well as yourself. . . . Several copies of these as well as of your other notes should be made at leisure times, & put into the care of the most trustworthy of your attendants, to guard, by multiplying them, against the accidental losses to which they will be exposed. . . .





Jefferson to Lewis: Your mission is to find the "most direct water communication."

As far up the Missouri as the white settlements extend, an intercourse will probably be found to exist between them & the Spanish posts of St. Louis opposite Cahokia, or Ste. Genevieve opposite Kaskaskia. From still further up the river, the traders may furnish a conveyance for letters. Beyond that, you may perhaps be able to engage Indians to bring letters for the government to Cahokia or Kaskaskia, on promising that they shall there receive such special compensation as you shall have stipulated with them. Avail yourself of these means to communicate to us, at seasonable intervals, a copy of your journal, notes & observations, of every kind, putting into cypher whatever might do injury if betrayed. . . .

Given under my hand at the city of Washington this 20th day of June 1803.

TH: J. Pr. U.S. of A.

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Discuss your general health status with your doctor to ensure that you are healthy enough to engage in sexual activity. If you experience chest pain, nausea, or any other discomforts during sex or an erection that lasts longer than 4 hours, seek immediate medical help. The most common side effects of VIAGRA are headache, facial flushing, and upset stomach. Less commonly, bluish vision, blurred vision, or sensitivity to light may briefly occur.

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How Sex Affects the Body

How VIAGRA Works

VIAGRA Is Not for Everyone

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- are taking any

What VIAGRA Does Not Do

- VIAGRA
- protect you or your partner from getting sexually
- VIAGRA

What To Tell Your Doctor Before You Begin VIAGRA

your doctor can decide if VIAGRA is right for you. VIAGRA can cause temporary lowering of your blood pressure. You will need to have a

- Tell your doctor if you have any heart problems, your blood

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Some medicines can change the way VIAGRA works. Tell your doctor **any medicines** you are taking. Do not start taking any medicines

- Because VIAGRA
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- If you are taking a medicine called a protease inhibitor, your doctor may
- VIAGRA

Finding the Right Dose for You

VIAGRA
you expect, talk with your doctor. You and your doctor can
dose that works best for you.

- Do not take more VIAGRA than your doctor prescribes.
- If you
- VIAGRA should not be taken more than once a day.

If you
a dose of greater than 25 mg of VIAGRA at the
as your dose of alpha-blocker

How To Take VIAGRA

sexually excited. You will not get an erection just by taking the

Possible Side Effects

VIAGRA can cause some side effects. These effects are
usually
rarely in men taking VIAGRA. Most, but not all, of these men had heart problems before taking this medicine. It is not possible to determine

VIAGRA may cause other side effects besides those listed on this sheet. If you want more information or develop any side effects or symptoms you are

Accidental Overdose

In case of accidental overdose, call your doctor right away.

Storing VIAGRA

Keep VIAGRA
out of the reach of children. Keep VIAGRA in its original
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Real-life cowboys and gunslingers (Wild Bill Hickok, second from left, top row) acted in staged plays known as border dramas.

Draw!

A richly detailed scrapbook assembled by a 19th-century illustrator offers a fresh look at some of the West's most colorful characters

THERE SITS LAWMAN Wild Bill Hickok—a rifle propped against his left leg, his mustache hanging lankily over the corners of his mouth. And scout Kit Carson Jr., a penetrating gaze issuing from beneath the broad and sweeping brim of his hat. And here is dancer Josephine Morlacchi—a feathered headband crowning a stream of dark hair, her glance self-consciously turned toward the ground, her hands clasped together in a demure pose. But why are these portraits of Western characters gathered together, all 13 of them, on a single page in an artist's scrapbook? And what to make of the cursive proclamation, "The Border Drama"?

"This page alone is a national treasure," says Paula Fleming, a recently retired photo archivist at the National Anthropological Archives of the Smithsonian's National Museum of Natural History. For the past 33 years, Fleming has been chief protector of the 150-year-old album, which is filled with photographs, newspaper clippings, drawings, letters, autographs and maps collected by New York-based field artist James E. Taylor. Fleming has recently created a digital version of the entire album and put it on the Web (www.nmnh.si.edu/naa/taylor/taylor.htm).

Initially, Fleming believed "border drama" was merely

Taylor's own descriptive phrase for a collection of colorful frontier personalities that also included showman Buffalo Bill Cody and the young cowboy John Baker "Texas Jack" Omohundro. She soon learned, however, that the subjects were all collaborators in now-forgotten stage plays that became known as border dramas. In the late 19th century, these shows culminated in Cody's Wild West show, which toured America and western Europe, mythologizing the frontier with classic scenes of an attack on a stagecoach, a bison hunt and an Indian battle.

For Taylor, who died at age 61 in 1901, the 118-page volume served as a vital reference tool—a visual dictionary, or clip art, if you will. Taylor was one of the top illustrators of his time and a forebear of the modern photojournalist. His images of frontier life after the Civil War were widely circulated in *Leslie's Illustrated*, a weekly national newspaper that catered to Americans' thirst for scenes of westward expansion. Taylor collected photographs of prominent Indians and military heroes; tepees and cactuses; gold mines and government ration distributions; treaty signings and Mormon settlers. He dedicated five pages, for example, to clippings and photographs about the Meeker Massacre, an 1879 Ute uprising in Colorado that climaxed in the murder of more than a dozen settlers and soldiers, and the 23-day captivity of several women and children. With its 1,109 images and newspaper accounts, the album provided Taylor realistic details—perhaps a face, a gesture, a uniform—with which to anchor his dramatic line drawings.

Another of the riches of the border drama page is the image of Hickok itself: it is a rare tintype, cropped from what once was a group portrait that included Cody, Omohundro and others. Fleming wonders whether the Smithsonian tintype could be the original from which subsequent copies were made.

Time has made brittle flakes of the paper edges and separated pages from their binding. Some captions and images are missing. Nonetheless, the scrapbook is an archivist's dream. Says Fleming: "People have asked me if there were a fire and I could save only ten things from the archives, what I would grab. The first would be the Taylor album." —*VICTORIA DAWSON*

Taylor's drawings (above, Josephine Meeker in 1879) romanticized the West.

◂ FROM THE ATTIC ▸

WRIGHTING PAST WRONGS It took decades, but on October 24, 1942, the Smithsonian finally apologized to Orville Wright and acknowledged that he and his brother Wilbur were the first to pilot a powered airplane. Now, Orville (Wilbur died in 1912) would summon his famed Flyer home from the Science Museum in London, where it had been on display for two decades, and donate it to the Smithsonian, thus ending one of the century's most bitter feuds. It all started back in 1903, nine days before the Wrights' successful Kitty Hawk flights, when an airplane designed by Smithsonian Secretary Samuel P. Langley crashed into the Potomac River. In 1914, his Smithsonian colleagues, in a case of misguided loyalty, altered Langley's Aerodrome to make it fly, then hung it in the Smithsonian as the "First Machine Capable of Flight Carrying a Man," a claim that Langley, who died in 1906, had never made.

Indignant, Orville Wright told the *New York Times* on May 17, 1925, that he had held out hope for years that "objectionable conditions in the Smithsonian would change." On December 17, 1948, B-36 bombers and B-29 Superfortresses roared overhead as the Flyer went on display in the Smithsonian's Arts and Industries Building, above. Today, visitors can see the Wright Flyer's intricate controls up close in its new eye-level position at the National Air and Space Museum on the Mall. —*BETH PY-LIEBERMAN*

THEY DON'T ALL GO TO AUCTION.

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You've Gotta Be Kidding

A world-famous collector of Japanese prints leaves an emperor-size surprise in his will

AMONG HIS FRIENDS, Bob Muller was known as a practical joker. Even so, Jim Ulak, chief curator at the Arthur M. Sackler Gallery, was stunned to get a call two weeks after Muller's April 10 death, informing him that his friend had bequeathed his entire multimillion-dollar collection of Japanese prints to the Sackler. Ulak had tried for seven years to buy the prints.

"I couldn't speak for about 20 seconds," he says. When Muller died at age 91, Ulak assumed that the 4,400 prints, dating from 1850 to 1950, would be auctioned off piece by piece.

But in 1999, unknown to anyone but his lawyer, Muller had added a provision to his will that gave the collection to the Sackler if it had not been sold at the time of his death.

Before the bequest, the museum owned about 800 Japanese prints, not enough to make it a major repository of the art form. The addition of Muller's collection, the world's most comprehensive assemblage of neo-romantic works known as *shin-hanga* ("new prints"), makes the Sackler a leader for those interested in Japanese art. Ulak plans to exhibit highlights from the collection next August.

Muller's lifelong passion began with love at first sight. Walking in Midtown Manhattan while on holiday from his history studies at Harvard University in 1931, he saw a print by shin-hanga master Kawase Hasui in the window of the Shima Art Company. (Muller later bought the store.) That first print, Ulak says, depicted a modern bridge in twilight with a boat traveling underneath, the boatmen warming their hands before a smoky fire onboard. He bought it on the spot for five dollars—his entire allowance for the month. Muller eventually came to own more than 400 Hasui prints, making the artist the most represented in the collection. Hasui's art "speaks to me personally," Muller said later. (During Muller's 1940 honeymoon in Japan, he met the aging master.)

Woodblock print by Yoshikawa Kanpo, 1923.

A thin, wiry man of moderate means who watched his inexpensive prints multiply in value, Muller collected actively for 71 years and housed his artwork in a climate-controlled barn on his 18-acre farm in Newtown, Connecticut. In addition to his art, he devoted himself to nature and to his wife, Ingeborg, and his five children. His son, Rob, runs Merwin's Art Shop, a framing store in New Haven, Connecticut, that his father owned since 1962.

Muller wanted to share his collection with as many people as possible. "He didn't want it to just grow moldy in a basement," says Fred Cowles, Muller's son-in-law. Cowles adds that his father-in-law always wanted his collection to go to the Sackler, and despite the museum's unsuccessful efforts to buy it, Muller didn't seem concerned about its ultimate fate.

"Maybe it was his last practical joke," Ulak suggests.

—ALAYA DAWN JOHNSON

HURRY IN

"Diana Walker Photojournalist," a 135-image retrospective of the work of the portraitist and *Time* magazine photographer, closes at the National Museum of American History January 4. She's best known for documenting presidents and their families (Nancy Reagan and Lady Liberty, left) from Ford to Clinton.

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Smithsonian

TAKING WING

A CENTURY OF FLIGHT

From the Wright brothers' breakthrough 100 years ago this month to the latest robot jets, the past century has been shaped by the men and women who got us off the ground ~ BY ANDREW CURRY

AS AN AIR FORCE TEST PILOT, Lt. Col. Dawn Dunlop has flown dozens of different airplanes, from the nimble F-15E Strike Eagle fighter to the massive C-17 transport jet to the Russian MIG-21. Stationed at Edwards Air Force Base, she's part of the elite squadron that is putting the cutting-edge F/A-22 Raptor, a jet fighter, through its paces. But the aircraft that Dunlop has had the toughest time controlling was a replica of the Wright brothers' 1902 glider. More than once she crash-landed the muslin-skinned craft onto the windswept sands of Kitty Hawk, North Carolina. "It was a real eye-opener," Dunlop recalls of the (bruising) experience last year, part of a commemorative Air Force program. "They've made it so simple to fly today we've forgotten how difficult it was back then."

This month, much of the world will be revisiting "back then" as numerous ceremonies, books and reenactments mark the invention of powered flight. It was just after 10:30 in the morning on December 17, 1903, when Orville Wright, an Ohio inventor and bicycle shop owner, took off into a near-freezing head wind for a 12-second propeller-driven trip—a 120-foot voyage that may well have launched the modern age. "Aviation is the definitive technology of the 20th century," says Tom Crouch, senior curator of aeronautics at the Smithsonian National Air and Space Museum (NASM) and author of *Wings: A History of Aviation, from Kites to the Space Age*. "Flight symbolized our deepest aspirations, like freedom and control of our destiny."

Amid all the celebrations of the long-anticipated centennial, it might be easy to lose sight of just how amazing those landmark early flights were. As Dunlop discovered, Wright aircraft were dangerous. Frail assemblies of wire, wood and cloth powered by homemade engines, they were reluctant birds, difficult to steer and easy to crash. In fact, planes based on the Flyer that Orville Wright coaxed off the ground would kill dozens of pilots in coming years. Still, the craft embodied what we recognize today as the basics of flight, and though aviation has advanced far beyond anything the brothers might have first imagined—in 2000, airplanes carried more than three billion passengers—the Wrights anticipated a surprising range of crucial developments. "Flying that glider was a real challenge," Dunlop says, "but when you take yourself back, you realize what a brilliant design it really was."

From the ancient Greeks, whose mythological tale of Icarus' wax wings melting when he soared too close to the sun, to carvings left by the South American Incan civilization on the walls of its holy Andean citadel of Machu Picchu, humanity has long been fascinated by the idea of flying. Renaissance paintings and frescoes of Christ's ascension into heaven "had a concept of air as a thing to be worked," says Richard Hallion, a former NASM curator and Air Force historian, and author of *Taking Flight: Inventing the Aerial Age from Antiquity through the First World War*. "Christ is shown lifting off like a rocket, and the Apostles all have windblown garments. Angels have muscular wings in proportion to their size." Among the most startling early visions of powered human flight are Leonardo da Vinci's 15th-century sketches of mechanical flapping wings and crude helicopters. Yet Leonardo's ideas never got off the page.

The first person to apply scientific principles to the problems of flight was George Cayley, an English baronet known today as the father of aerial navigation. Born in 1773, he built the first glider to go aloft with a person aboard—his coachman, in 1853—and correctly identified lift, drag and thrust as the main forces to be mastered for powered flight. Cayley, who published his research in the likes of *Nicholson's Journal of Natural Philosophy, Chemistry, and the Arts*, was the first aviation experimenter to use research methods that would be familiar to today's scientists and engineers, Peter Jakab,

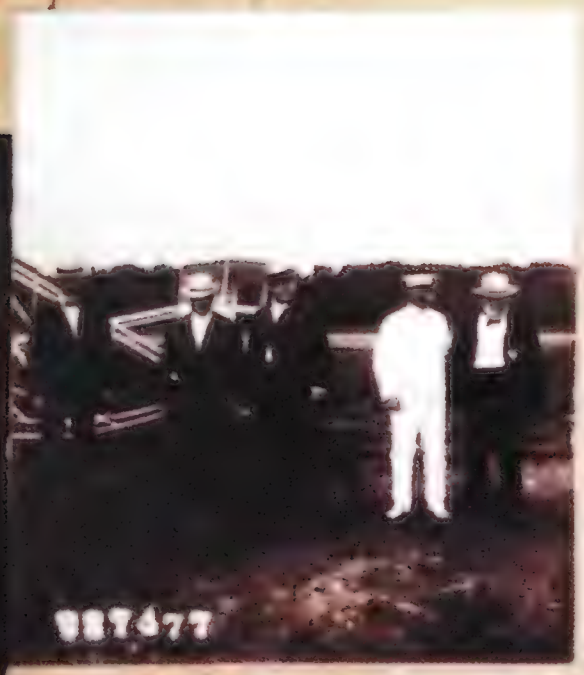
The world's first military aircraft, a Wright brothers design, was piloted by Orville at Fort Myer, Virginia, in June and July 1909.

The Wright aeroplane passing the starting derrick. (Orville Wright in machine) Ft Myer, Va

The Wright aeroplane passing the starting derrick. (Orville Wright in machine - Wilbur Wright in white shirt) - Ft Myer Va.

The Wright aeroplane [illegible] the Wright aeroplane going up - Ft Myer Va

The Wright aeroplane passing the starting rail - Ft Myer Va



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Stoking public interest in aviation, Charles Lindbergh (left, c. 1927) was the first to fly solo across the Atlantic, in 1927. Amelia Earhart (right, c. 1930) was the first woman to make the solo transatlantic flight, in 1932. She vanished over the Pacific Ocean in 1937.

chairman of NASM's aeronautics division, writes in his book *Visions of a Flying Machine*.

The first hot-air balloon with passengers took to the air in 1783, when its inventors, the Montgolfier brothers, sent a sheep, a rooster and a duck soaring for eight minutes in the sky over Versailles. For the next century, lighter-than-air balloons and airships, unwieldy or impossible to control, were considered the only realistic way to get aloft. Meanwhile, inventors kept struggling with the challenge of powered, heavier-than-air flight. Some built gliders shaped like moths or bats; others built massive, steam-powered aircraft that were unflyable; one such contraption collapsed under its own weight. None "had the slightest influence on the invention of the airplane," Crouch writes.

Some pioneers were on the right track. The German Otto Lilienthal built 16 different gliders between 1891 and 1896, making almost 2,000 flights in the low hills outside Berlin. In his experiments, he accumulated data on lift and would inspire the Wright brothers, but his death in 1896 in one of his own gliders had a dampening effect on aviation. Convinced that powered flight was a dangerous folly, many Europeans working on the problem aborted their efforts.

ANDREW CURRY is a U.S. News & World Report *associate editor who covers history. This is his first story for* SMITHSONIAN.

Unlike their predecessors, the Wrights realized that control of an aircraft was at least as important as lift and thrust. Their crucial inspiration was understanding that aircraft would fly in three dimensions: climbing and descending (pitch), left and right (yaw), and roll (the banking, tilting motion that in conjunction with the rudder sends a plane into dramatic, sweeping turns). Roll, especially, had been largely ignored or unimagined by their predecessors. Hallion writes that the Wrights, as cyclists, visualized an airplane turning much as a bike rider makes a hard turn—by leaning into it. John Anderson, curator of aerodynamics at the National Air and Space Museum and author of *The Airplane—A History of Its Technology,* says the Wrights' "longest-lasting technological contribution is purely and simply flight control. Wilbur Wright was the first person to understand how an airplane turned."

Simple rudders, like those used to steer boats through water, and elevators (like rudders, except horizontal) were enough to move a plane up and down or left and right. But the third dimension, making a plane bank and turn, required a wholly new approach. The Wrights' first breakthrough was realizing that air flowing across the wings could be used to push one wing down while it lifted the other—"rolling" the plane through a banked, leaning turn. Their next was figuring out how to get both wings to move the right way at the right

time—a beautifully simple concept called wing-warping, which involved twisting the entire wing to facilitate turning.

The Wrights' combination of creativity and engineering skill continues to amaze scholars today. "They had the ability to visualize machines that hadn't been built yet," Crouch says. From the time they hit upon wing-warping as the solution for moving an aircraft in three dimensions in the spring of 1899, it was only four and a half years until their epic, if brief, powered flight at Kitty Hawk. As Hallion puts it, "The Wrights, when they got their act together, moved with incredible speed."

AT FIRST, the airplane's potential beggared the imaginations of the most progressive scientists. Too expensive for anyone but rich daredevils and too dangerous for regular commercial use, the Wrights' machine was laughed off as frivolous; even the brothers thought that only national governments would have the resources to build and fly airplanes. "It is doubtful if aeroplanes will ever cross the ocean," the eminent Harvard astronomer William Pickering scoffed in 1908, according to Hallion's history. "The public has greatly overestimated the possibilities of the aeroplane, imagining that in another generation they will be able to fly over to London in a day. This is manifestly impossible."

Such disdain chilled U.S. investment in aviation. Between 1908 and 1913, the U.S. government spent only $435,000 on aviation—less than Germany, France, Chile and even Bulgaria. European inventors and entrepreneurs were soon building better, faster and more stable planes than were the Wrights. "The Wright airplane was superseded by European designs as early as 1910," says Jakab. German, Russian and especially French aviators and inventors soon dominated the skies, as our vocabulary attests; "aviation," "aileron," "fuselage" and "helicopter" all have French origins.

For all the Wrights' achievements, their aircraft were still iffy. Half-a-dozen pilots were killed flying Wright flyers in a one-year period starting in 1909; other early planes were also dangerous. "Europeans weren't learning from the Wright experience how to fly, they were learning how to fly better," Hallion writes. Designers like Louis Blériot moved the Wrights' "pusher" propellers to the front of the plane, which simplified the design (a rear-mounted propeller requires more elaborate structures for the rudders and elevators). The original biplane configuration—which was strong, light and generated a lot of lift—dominated airplane design until the early 1930s, when monoplanes, which are faster, took over.

At the start of World War I, the airplane had come into its own as a military and commercial technology. The open-cockpit, largely wood-and-fabric airplanes jousting in Europe's skies—planes like the British Sopwith Camel and the German Albatros—were faster and far more nimble than the Wright Flyer, but still dangerous. Heroes like Manfred von Richthofen (the "Red Baron") and America's Eddie Rickenbacker created the mystique of the fighter ace, but thousands of others perished in the air. In 1917, the life expectancy of a British fighter pilot in a combat zone, Hallion writes, was three weeks.

But the war speeded up development of the fledgling aviation industry. The first passenger flight had been in 1908, when Wilbur Wright carried one Charles Furnas during tests of the

POWERED FLIGHT'S FIRST 100 YEARS

1900

1903
The Wright brothers' first powered flight takes place on December 17 at Kitty Hawk, North Carolina

1906
Romanian Trajan Vuia builds and flies the first monoplane

1906
In Paris, Brazilian Alberto Santos-Dumont makes the first significant powered flight in Europe

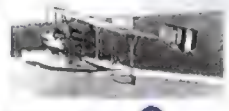
1907
Paul Cornu gets the first helicopter off the ground (barely) in Lisieux, France

1910

1911
In a U.S. Army test in San Francisco, a live bomb is dropped from a plane for the first time

1914
The first scheduled passenger flight occurs when an airboat hops across Florida's Tampa Bay from St. Petersburg to Tampa

1919
A six-man American crew flies from Rockaway, New York, to Lisbon, Portugal, in 19 days, completing the first transatlantic flight



1920

1926
In Auburn, Massachusetts, physicist and inventor Robert Goddard launches the first rocket. The liquid-fueled missile reaches a height of 41 feet

1927
Charles Lindbergh, 25, flies the *Spirit of St. Louis* from Long Island, New York, to Le Bourget, near Paris, in the first solo transatlantic flight

1929
U.S. Army Air Corps Lt. James H. Doolittle, 34, completes the first instrument-guided takeoff, flight and landing, at Mitchel Field in New York

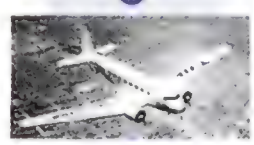
1930

1932
Amelia Earhart, 34, at the yoke of a Lockheed Vega from Newfoundland to Ireland, becomes the first woman to fly solo across the Atlantic

1933
Wiley Post, 33, achieves the first solo circumnavigation of the world when he returns to Brooklyn, New York, after a seven-day journey

1933
The first modern airliner, the ten-seat Boeing 247, makes its maiden flight

1935
The most successful airliner of its era, the McDonnell Douglas DC-3, takes off. The U.S. military will know it as the C-47



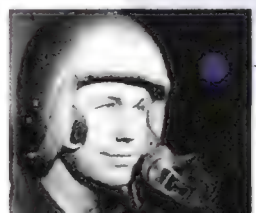
1939
A jet-powered aircraft, the Heinkel He 178, is flown for the first time, in Marieneke, Germany

1940

1942
At Muroc Lake in California, test pilot Robert Stanley flies the first U.S. jet aircraft, the Bell XP-59A Airacomet

1942
The German Air Force produces the first jet fighter, the Messerschmitt Me 262

1947
West Virginia's Chuck Yeager is the first to fly faster than the speed of sound when he booms above the California desert in a Bell X-1 at 662 mph



Wright Flyer. Scheduled passenger flights did not begin in earnest until January 1, 1914, when Tony Jannus, an entrepreneurial Florida pilot, started flying $5 hops across Tampa Bay. Planes flying at low speeds and low altitudes were buffeted by winds, causing a bumpy—and often sickening—ride. Poorly ventilated cabins filled with engine exhaust and gas fumes. And bad weather kept planes on the ground, making air travel unreliable. Yet public demand accelerated.

In the 1920s and '30s, investment by industry and government fueled innovation. Wood frames and cloth skins gave way to all-metal designs, which in turn made possible larger, stronger craft, streamlining, sealed cabins and high-altitude flight. Also important were reliable flight instruments such as the artificial horizon, altimeter and directional gyroscope, crucial to flying in poor weather (and keeping airlines on schedule). By 1932, U.S. airlines were flying more than 475,000 passengers a year.

In 1935, aviation reached a new peak—and, oddly perhaps, something of a plateau—with the development of the Douglas Aircraft Company's DC-3. With 21 seats, all-metal construction, a streamlined design, retractable landing gear, automatic pilot and a cruising speed of almost 200 miles per hour, the DC-3 is considered by many experts the pinnacle of the propeller-driven plane, and set the pattern for planes we know today.

As new engine designs drove propellers faster and faster—at their tips, they broke the sound barrier—engineers came up against baffling aerodynamic properties. Shock waves and unpredicted turbulence undermined performance. Propellers lost efficiency and thrust when they neared supersonic speeds.

The man who overcame that limit was not a professional engineer. Frank Whittle, a machinist's son and Royal Air Force pilot, came up with the idea for a jet engine while serving as a flight instructor in the early 1930s. "Whittle was an odd duck pushing an idea everyone thought was kind of nuts," says historian Roger Bilstein, author of *Flight in America: From the Wrights to the Astronauts*. "Nobody thought it would work."

Whittle persisted, eventually scraping together the resources to design a workable jet engine on his own. The concept, at any rate, is simple: air coming in at the front of the engine is compressed and combined with fuel, then ignited; the burning mixture roars out the back of the jet, generating tremendous thrust while passing through turbines that power the compressors in the front of the engine.

Whittle's jet engine was first tested in the lab in 1937 and, four years later, powered a specially designed fighter at an air base near Gloucester, England. Pilots watching the top-secret test flight from the side of the damp airfield were baffled. "My God, chaps, I must be going round the bend," one officer reportedly said later. "It hadn't got a propeller!"

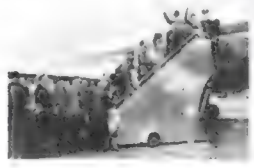
Meanwhile, a German engineer named Hans von Ohain had been developing his own jet engine. In 1944, a handful of jet fighters and bombers, including the Messerschmitt Me 262—the

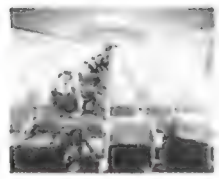
The world's first successful airliner and a masterful blend of form and function, the DC-3 (in Honnington, England, in 1948) debuted in 1935. Some 13,000 were built before production ceased in 1945.

ALL IMAGES BETTMAN/CORBIS AIRLINER: CORBIS AUROGRAPHICS/CORBIS

1950

1952
The first scheduled jetliner service begins with the flight from London to Johannesburg on a British De Havilland Comet

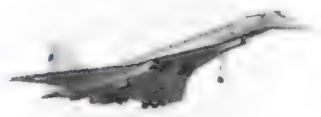




1958
The Boeing 707, the most successful passenger liner of the early jet age, enters commercial service with a flight from New York to Paris

1960

1964
The SR-71 Blackbird, the world's fastest and highest-flying airplane and a U.S. Air Force spy plane, makes its first flight



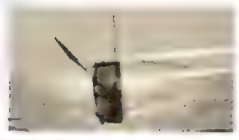
1968
The first supersonic passenger airliner to get off the ground is the Soviet Tupolev TU-144, beating the British-French Concorde by two months

1969
The first jumbo jet, the 452-passenger Boeing 747, makes its first flight

1970

1976
Streaking from Paris to Rio in 7.5 hours, the Concorde completes the first scheduled commercial supersonic flight

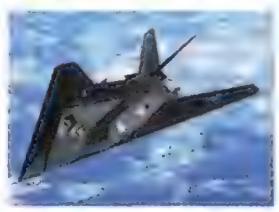
1978
The global positioning system (GPS), a network of navigation satellites managed by the U.S. Air Force, goes into operation



1979
A British cyclist pedals the 70-pound Gossamer Albatross across the English Channel, then the longest flight by a human-powered plane

1980

1981
The U.S. Air Force F-117A, the first radar-evading stealth fighter, debuts

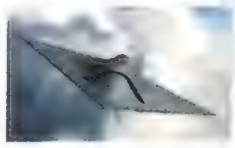


1988
The heaviest plane ever built, the 1.3-million-pound six-engine Soviet Antonov An-225 transport, actually gets off the ground

1990

1994
The first flight of the U.S. military Predator Unmanned Aerial Vehicle begins the era of pilotless military aviation

1998
The U.S. Air Force's latest eyes in the sky is tested in California. The Global Hawk reconnaisance jet cruises at 60,000 feet



2000
Airbus begins production of the first superjumbo passenger jet, the A380, capable of seating as many as 820 people. Commercial service is planned for 2006

2003
The U.S. Air Force's X-47A, a pilotless fighter, flies for the first time in a test over California

2010

world's first operational jet—saw service in the *Luftwaffe*. In America, military brass put jets on a back burner, convinced the war would be won with conventional airplanes, and lots of them. Diverting resources to work on the unproven jet, authorities insisted, would be a waste of time. But after the Allies swept through Germany at the end of the war, they recruited dozens of German jet and rocket scientists, including Wernher von Braun, and then took them to the United States in "Operation Paperclip." The plan laid the groundwork for decades of U.S.-led innovation, from immediately useful jet technology to advances in rocketry that would ultimately make the space program possible.

Jet propulsion technology was the most important thing in aviation since the Wrights. "The jet wasn't a refinement of anything, it was a complete breakthrough," says NASM's Anderson. "A whole second era of aviation was opened up by Whittle and von Ohain." Yet the jet's inventors never got the recognition the Wrights enjoyed. Whittle's patents were appropriated by the British government during the war, and von Ohain quietly began a new career in 1947—as a U.S. Air Force propulsion scientist.

Yet it would take years of painstaking work to turn the jet plane into reliable transportation. In the early days, fighter jet pilots had a one in four chance of dying in an airplane accident. Supersonic speeds, at least about 650 mph, required rethinking conventional notions about aerodynamics, control and efficiency. The design of the X-1, which broke the sound barrier over California's Muroc Dry Lake in 1947, was based on the .50-caliber bullet, an object that engineers knew went supersonic. It was flown by laconic West Virginian test pilot Chuck Yeager, a veteran World War II ace who counted two Messerschmitt 262s among his kills.

THE BRAVERY of those test pilots is what we tend to remember of jet travel's early days. But perhaps more important was the massive government expenditure on aviation and space research in the 1950s and '60s. By 1959, the aviation industry was one of the largest employers in America's manufacturing sector, with more than 80 percent of its sales in the decade and a half after World War II to the military. America's aviation and space successes became potent symbols in the cold war, and the booming aerospace industry got what amounted to a blank check from the government. After all, as a character in the movie version of *The Right Stuff* observed, "No bucks, no Buck Rogers."

"Government investment in things related to flight drove a whole broad front of technological development," Crouch says. "One thing after another developed because it was somehow related to flight, and governments were spending money on it." Computers became ubiquitous aviation tools, from aiding design of complex aircraft to forming global ticketing networks. The jet engine also took civil aviation to new heights—and speeds. Boeing introduced a prototype of the 707 passenger jet in 1954 that could fly more than 600 mph (three times faster than the DC-3). Four years later, Pan American began regular 707 service from New York to Paris, ushering in the jet age.

As the hard-won lessons of military test pilots yielded safer, more stable jet designs, the very shape of the world began to change. From massive B-52 nuclear bombers capable of flying nonstop from Omaha to Moscow in 11 hours, to passenger jets that could cross the Atlantic in 7 hours, the jet made international travel accessible to almost everyone. Big passenger jets became common—the 452-passenger Boeing 747 debuted in 1969—and the number of people who flew climbed steadily each year.

Supersonic passenger planes were the next obvious frontier. But with the exceptions of the Soviet Tupolev TU-144, which first flew in December 1968, and the Concorde, a joint venture between France and Britain that took off two months later, supersonic passenger travel would remain largely a novelty. Both planes were a bust financially. In almost 30 years flying across the Atlantic at twice the speed of sound, the gas-guzzling Concorde never broke even. Air France ceased regularly scheduled Concorde service this past May and British Airways in October. Nonetheless, entrepreneurs and politicians have continued to float futuristic (and so far impractical) ideas, like the Orient Express, a massive supersonic transport that would carry up to 200 passengers from New York to Beijing in two hours, skipping like a stone across the earth's atmosphere at Mach 5.

Attaining ever-higher speeds hasn't necessarily been the highest priority for the military. Since the 1970s, military planners have emphasized maneuverability and stealth. But the new planes, with smaller, angled wings and control surfaces, tended to be unstable. That changed with the development in the 1970s of onboard computers, or "fly-by-wire" systems, in aviation lingo, capable of making thousands of adjustments per second to rudders and other control surfaces. The Northrop B-2 stealth bomber and the Lockheed F-117A Nighthawk stealth fighter, bizarre matte-black bundles of strange angles and stubby wings designed to disappear from enemy radar, seem to defy the laws of aerodynamics with the help of sophisticated software. The ultimate fly-by-wire technology, unmanned aerial vehicles, or UAVs, are remote-controlled drones, which have already seen service in the skies over Afghanistan and Iraq.

To many aviation experts, airplane technology seems to have hit another lull in the rate of progress. "That's the big question: Is the airplane in its form now a mature technology?" says NASM curator Jeremy Kinney. "The airlines are doing very well with wide-body, turbofan planes carrying hundreds of people, and the military is essentially innovating refinements. Is there even a next plateau?"

Engineers hope so. "Sure, we've reached a certain level of maturity over the last part of the 20th century that some see as a plateau, the same as in the '30s," says the Smithsonian's Anderson, a former chairman of the University of Maryland's Aerospace Engineering Department. "I believe this is a platform from which we'll jump off and see dramatic advances."

The age of jet travel began May 2, 1952, when a Comet 1 airliner at London Airport (above) departed for Johannesburg carrying 36 passengers and six crew members. Comets flew more than 100 million miles before being grounded in 1954 after accidents.

In addition to improvements in the efficiency and performance of existing aircraft, technological refinements may soon allow amazing accomplishments: fly-by-wire systems that keep a plane aloft with one wing shot off, the reduction or even elimination of sonic booms, and unmanned aircraft capable of dramatic maneuvers that would kill a pilot.

Curiously, some of the most advanced research going on right now bears a striking resemblance to innovations the Wrights made more than a century ago. At NASA's Dryden Flight Research Center in Edwards, California, engineers in the Active Aeroelastic Wing Program have equipped an F/A-18 Hornet fighter plane with more flexible wings that test the possibilities of aeroelastic wing design—essentially a version of the Wrights' wing-warping, albeit one that uses very advanced computer systems to induce wings to change shape at supersonic speeds. Aeroelastic wings make rolling, banking turns possible by twisting the wing itself, improving performance at supersonic speeds. "Very few birds fly with ailerons or leading edge flaps," quips Dick Ewers, a NASA test pilot on the project. Instead, he says, birds change the shape of their wings, depending on how fast or slow they're going and whether they're turning, climbing, diving or soaring. "Airplanes spend a lot of weight and money making wings stiff," he goes on. The aeroelastic wing will eventually do away with flaps and move the plane by changing the shape of the wing itself, he predicts: "Rather than stiffen the wing, we want to let it be flexible and take advantage of it."

A Centennial of Flight logo on the prototype plane proudly heralds the project's remarkable connection with tradition. Planes of the future may share an inspiration with the Wrights, who successfully guided their Flyer in three dimensions by shifting the shape of its wings. "One hundred years later, we may discover that the Wright brothers' answers were more correct aerodynamically than what we've been living with for 80 years," says Dave Voracek, the project's chief engineer. "We've really come full circle." ○

HOLD EVERYTHING!

The *Enterprise*. The Blackbird. The *Enola Gay*. A vast new Smithsonian facility outside Washington, D.C. opens December 15, with scores of restored aircraft and spacecraft, many on display for the first time ~ BY WILLIAM TRIPLETT

LARS McLAMORE and Samantha Gallagher are standing on the wings of a Focke Wulf 190, a German World War II fighter. They peer under the forward engine cowlings, searching for a place to attach straps so a crane can hoist the airplane onto a flatbed trailer. It's about 9 a.m. outside a Maryland storage facility operated by the Smithsonian's National Air and Space Museum (NASM). The Focke Wulf, a rare F model built in 1943, is a veteran of both the Eastern and Western Fronts and the only fighter aircraft of that vintage with electrically operated landing gear and flaps. It has been in storage for years, and McLamore and Gallagher have to get it to the museum's new facility near Dulles International Airport, 40 miles away.

The straps secured, the crane lifts the plane until its front wheels clear the ground. But the tail doesn't rise, and this piece of aviation history needs to be level, lest it be damaged when placed on the flatbed. The crane lowers it to the ground. "Everything about this move is trial and error," says McLamore, an aircraft maintenance specialist.

It's no ordinary move. Fifteen years in the planning, the new Steven F. Udvar-Hazy Center—scheduled to open December 15 and keyed to the 100th anniversary of the Wright brothers' historic flight—will ultimately contain more than 200 aircraft in its 245,000-square-foot aviation hall, which is more than 980 feet long, nearly 250 feet wide and, at its apex, 103 feet tall. Also making their December debut will be an Imax theater, an observation tower from which visitors can observe airplanes coming and going at Dulles, and a 47,000-square-foot aerospace hall (which then will close to the public to undergo finishing touches). The entire five-building Dulles-area facility, about as large as the U.S. Air Force's museum in Dayton, Ohio, will contain more than 17 acres of floor space.

On the workers' fourth attempt, the Focke Wulf rises perfectly level about seven feet in the air. Gallagher clambers into the semi's cab and eases the flatbed under the aircraft,

WILLIAM TRIPLETT, a freelance writer in Alexandria, Virginia, has covered aviation for Air & Space *magazine and* Newsday.

Opening the vast Steven F. Udvar-Hazy Center near Dulles Airport in Northern Virginia required 15 years of planning and a good deal of delicate, heavy lifting (left, the midnight move of a rare, 7,000-pound German World War II fighter, the Focke Wulf 190, from a Maryland storage facility to the Northern Virigina center). The new facility will eventually hold some 335 artifacts.

and half a dozen workers strap it down. The plane does not face straight ahead; rather, its nose is angled some 45 degrees off center, to reduce the overhang. Otherwise, the 34.5-foot wingspan would be too wide for highway loads, which are restricted to 30 feet. A few days later, after the workers have repeatedly checked their cargo, this strange convoy of flatbed and five escorts (including a police cruiser) crawls out of the parking lot a little before midnight, when traffic is minimal. Barely going 15 miles an hour, the vehicles wend their way onto the Washington Beltway.

SMITHSONIAN OFFICIALS had longed for another aviation facility for decades. The National Air and Space Museum, which opened on the Washington, D.C. Mall in 1976, encompasses 161,000 square feet, enough to exhibit only about 10 percent of the museum's collection. (The bulk of the holdings have been in storage or on loan to other museums.) In 1988, the St. Louis-based architectural firm Hellmuth, Obata + Kassabaum, designers of the modernist NASM building on the Mall, won a NASM-sponsored competition to design the supplemental facility. Congress then authorized $8 million to complete the plan, which centered around a curved-roof aviation hall inspired by a Zeppelin hangar.

Congress authorized no money to build the facility, so the Smithsonian launched a campaign to raise more than $300 million. Steven Udvar-Hazy, a Hungarian immigrant and pilot who made a fortune in the aircraft-leasing business, made a $60 million donation, at the time the largest single gift in the Institution's history. He has said his donation was motivated largely by a desire "to give back to America part of the rewards" that aviation had given him (see page 20).

But the slumping economy since 2000 has slowed private donations, and museum officials say another $92 million is needed to complete the new facility. Because the shortfall has delayed construction of the restoration and preservation shop, only 82 of the planned 200 aircraft will be on display come opening day.

In the early days of the center's construction, Tom Alison, chief of NASM's collections division, often sat down with William Jacobs, the senior exhibits designer, to arrange paper cutouts of the aircraft on a printout of the floor design. But a close look at some of the actual artifacts, like "Flak Bait," the nickname of a Martin B-26 Marauder, prompted them to change their plans. Built in 1943, this twin-engine warbird survived an extraordinary amount of antiaircraft fire while logging 207 combat missions in European skies—more than any other American aircraft during World War II. But it turned out the plane couldn't be fully restored in time to make the museum's opening.

Similarly, curators had wanted to hang a 1918 Spad XVI and a 1930 Curtiss Gulfhawk from trusses in the hall, but neither plane is sound enough to be suspended. (Each steel truss weighs 120 tons and is anchored to a pair of 170-ton concrete blocks 30 feet deep in the ground.) American aviation legend Billy Mitchell had flown the Spad biplane in World War I, earning himself the Distinguished Service Cross for "repeated acts of extraordinary heroism in action." The Gulfhawk was flown regularly by the renowned stunt pilot Al Williams. But both aircraft suffer from deterioration of the wing spars, where cables would be attached, so they'll stay on the floor. And sometimes a piece has unexpectedly shown up. After the Air France Concorde was retired from service this past May, the company donated one of the supersonic jets to the museum years ahead of schedule, forcing another round of musical aircraft.

Probably the best known—and most controversial—artifact on display is the *Enola Gay*, the B-29 Superfortress that dropped an atomic bomb on Hiroshima on August 6, 1945. Dismantled in 1960, it has been in storage ever since. Before its forward fuselage went on display at NASM in 1995, critics, many of them military veterans, faulted the proposed display text, which described the damage caused by atomic bombs dropped on Hiroshima and Nagasaki. They charged that the text overemphasized casualties and underplayed the lives that the bombings presumably saved by abruptly ending the war; the exhibit subsequently added information about deaths prevented and focused on the aircraft's technical advances. Since then, Smithsonian experts have carefully restored the entire plane. The new *Enola Gay* exhibit acknowledges the plane's role in the bombing and presents details such as the B-29's having

The complex includes the aviation hall (welcoming the world's fastest jet, the SR-71 Blackbird, in September) and a tower affording views of Dulles International Airport.

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20-MG, 40-MG Delayed-Release Capsules

BRIEF SUMMARY Before prescribing NEXIUM, please see full Prescribing Information. **INDICATIONS AND USAGE** NEXIUM is indicated for the short-term treatment (4 to 8 weeks) in the healing and symptomatic resolution of diagnostically confirmed erosive esophagitis. **CONTRAINDICATIONS** NEXIUM is contraindicated in patients with known hypersensitivity to any component of the formulation or to substituted benzimidazoles. **PRECAUTIONS** Symptomatic response to therapy with NEXIUM does not preclude the presence of gastric malignancy. Atrophic gastritis has been noted occasionally in gastric corpus biopsies from patients treated long-term with omeprazole, of which NEXIUM is an enantiomer. **Information for Patients** NEXIUM Delayed-Release Capsules should be taken at least one hour before meals. For patients who have difficulty swallowing capsules, one tablespoon of applesauce can be added to an empty bowl and the NEXIUM Delayed-Release Capsule can be opened, and the pellets carefully emptied onto the applesauce. The pellets should be mixed with the applesauce and then swallowed immediately. The applesauce used should not be hot and should be soft enough to be swallowed without chewing. The pellets should not be chewed or crushed. The pellet/applesauce mixture should not be stored for future use. Antacids may be used while taking NEXIUM. **Drug Interactions** Esomeprazole is extensively metabolized in the liver by CYP2C19 and CYP3A4. *In vitro* and *in vivo* studies have shown that esomeprazole is not likely to inhibit CYPs 1A2, 2A6, 2C9, 2D6, 2E1 and 3A4. No clinically relevant interactions with drugs metabolized by these CYP enzymes would be expected. Drug interaction studies have shown that esomeprazole does not have any clinically significant interactions with phenytoin, warfarin, quinidine, clarithromycin or amoxicillin. Post-marketing reports of changes in prothrombin measures have been received among patients on concomitant warfarin and esomeprazole therapy. Increases in INR and prothrombin time may lead to abnormal bleeding and even death. Patients treated with proton pump inhibitors and warfarin concomitantly may need to be monitored for increases in INR and prothrombin time. Esomeprazole may potentially interfere with CYP2C19, the major esomeprazole metabolizing enzyme. Coadministration of esomeprazole 30 mg and diazepam, a CYP2C19 substrate, resulted in a 45% decrease in clearance of diazepam. Increased plasma levels of diazepam were observed 12 hours after dosing and onwards. However, at that time, the plasma levels of diazepam were below the therapeutic interval, and thus this interaction is unlikely to be of clinical relevance. Esomeprazole inhibits gastric acid secretion. Therefore, esomeprazole may interfere with the absorption of drugs where gastric pH is an important determinant of bioavailability (eg, ketoconazole, iron salts and digoxin). Coadministration of oral contraceptives, diazepam, phenytoin, or quinidine did not seem to change the pharmacokinetic profile of esomeprazole. **Carcinogenesis, Mutagenesis, Impairment of Fertility** The carcinogenic potential of esomeprazole was assessed using omeprazole studies. In two 24-month oral carcinogenicity studies in rats, omeprazole at daily doses of 1.7, 3.4, 13.8, 44.0 and 140.8 mg/kg/day (about 0.7 to 57 times the human dose of 20 mg/day expressed on a body surface area basis) produced gastric ECL cell carcinoids in a dose-related manner in both male and female rats; the incidence of this effect was markedly higher in female rats, which had higher blood levels of omeprazole. Gastric carcinoids seldom occur in the untreated rat. In addition, ECL cell hyperplasia was present in all treated groups of both sexes. In one of these studies, female rats were treated with 13.8 mg omeprazole/kg/day (about 5.6 times the human dose on a body surface area basis) for 1 year, then followed for an additional year without the drug. No carcinoids were seen in these rats. An increased incidence of treatment-related ECL cell hyperplasia was observed at the end of 1 year (94% treated vs 10% controls). By the second year the difference between treated and control rats was much smaller (46% vs 26%) but still showed more hyperplasia in the treated group. Gastric adenocarcinoma was seen in one rat (2%). No similar tumor was seen in male or female rats treated for 2 years. For this strain of rat no similar tumor has been noted historically, but a finding involving only one tumor is difficult to interpret. A 78-week mouse carcinogenicity study of omeprazole did not show increased tumor occurrence, but the study was not conclusive. Esomeprazole was negative in the Ames mutation test, in the *in vivo* rat bone marrow cell chromosome aberration test, and the *in vivo* mouse micronucleus test. Esomeprazole, however, was positive in the *in vitro* human lymphocyte chromosome aberration test. Omeprazole was positive in the *in vitro* human lymphocyte chromosome aberration test, the *in vivo* mouse bone marrow cell chromosome aberration test, and the *in vivo* mouse micronucleus test. The potential effects of esomeprazole on fertility and reproductive performance were assessed using omeprazole studies. Omeprazole at oral doses up to 138 mg/kg/day in rats (about 56 times the human dose on a body surface area basis) was found to have no effect on reproductive performance of parental animals. **Pregnancy** *Teratogenic Effects. Pregnancy Category B*—Teratology studies have been performed in rats at oral doses up to 280 mg/kg/day (about 57 times the human dose on a body surface area basis) and in rabbits at oral doses up to 86 mg/kg/day (about 35 times the human dose on a body surface area basis) and have revealed no evidence of impaired fertility or harm to the fetus due to esomeprazole. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed. Teratology studies conducted with omeprazole in rats at oral doses up to 138 mg/kg/day (about 56 times the human dose on a body surface area basis) and in rabbits at doses up to 69 mg/kg/day (about 56 times the human dose on a body surface area basis) did not disclose any evidence for a teratogenic potential of omeprazole. In rabbits, omeprazole in a dose range of 6.9 to 69.1 mg/kg/day (about 5.5 to 56 times the human dose on a body surface area basis) produced dose-related increases in embryo-lethality, fetal resorptions, and pregnancy disruptions. In rats, dose-related embryo/fetal toxicity and postnatal developmental toxicity were observed in offspring resulting from parents treated with omeprazole at 13.8 to 138.0 mg/kg/day (about 5.6 to 56 times the human doses on a body surface area basis). There are no adequate and well-controlled studies in pregnant women. Sporadic reports have been received of congenital abnormalities occurring in infants born to women who have received omeprazole during pregnancy. **Nursing Mothers** The excretion of esomeprazole in milk has not been studied. However, omeprazole concentrations have been measured in breast milk of a woman following oral administration of 20 mg. Because esomeprazole is likely to be excreted in human milk, because of the potential for serious adverse reactions in nursing infants from esomeprazole, and because of the potential for tumorigenicity shown for omeprazole in rat carcinogenicity studies, a decision should be made whether to discontinue nursing or to discontinue the drug, taking into account the importance of the drug to the mother. **Pediatric Use** Safety and effectiveness in pediatric patients have not been established. **Geriatric Use** Of the total number of patients who received NEXIUM in clinical trials, 778 were 65 to 74 years of age and 124 patients were ≥ 75 years of age. No overall differences in safety and efficacy were observed between the elderly and younger individuals, and other reported clinical experience has not identified differences in responses between the elderly and younger patients, but greater sensitivity of some older individuals cannot be ruled out. **ADVERSE REACTIONS** The safety of NEXIUM was evaluated in over 10,000 patients (aged 18-84 years) in clinical trials worldwide including over 7,400 patients in the United States and over 2,600 patients in Europe and Canada. Over 2,900 patients were treated in long-term studies for up to 6-12 months. In general, NEXIUM was well tolerated in both short- and long-term clinical trials. The safety in the treatment of healing of erosive esophagitis was assessed in four randomized comparative clinical trials, which included 1,240 patients on NEXIUM 20 mg, 2,434 patients on NEXIUM 40 mg, and 3,008 patients on omeprazole 20 mg daily. The most frequently occurring adverse events (≥1%) in all three groups was headache (5.5, 5.0, and 3.8, respectively) and diarrhea (no difference among the three groups). Nausea, flatulence, abdominal pain, constipation, and dry mouth occurred at similar rates among patients taking NEXIUM or omeprazole. Additional adverse events that were reported as possibly or probably related to NEXIUM with an incidence < 1% are listed below by body system: ***Body as a Whole:*** abdomen enlarged, allergic reaction, asthenia, back pain, chest pain, chest pain substernal, facial edema, peripheral edema, hot flushes, fatigue, fever, flu-like disorder, generalized edema, leg edema, malaise, pain, rigors; ***Cardiovascular:*** flushing, hypertension, tachycardia; ***Endocrine:*** goiter; ***Gastrointestinal:*** bowel irregularity, constipation aggravated, dyspepsia, dysphagia, dysplasia GI, epigastric pain, eructation, esophageal disorder, frequent stools, gastroenteritis, GI hemorrhage, GI symptoms not otherwise specified, hiccup, melena, mouth disorder, pharynx disorder, rectal disorder, serum gastrin increased, tongue disorder, tongue edema, ulcerative stomatitis, vomiting; ***Hearing:*** earache, tinnitus; ***Hematologic:*** anemia, anemia hypochromic, cervical lymphoadenopathy, epistaxis, leukocytosis, leukopenia, thrombo-cytopenia; ***Hepatic:*** bilirubinemia, hepatic function abnormal, SGOT increased, SGPT increased; ***Metabolic/Nutritional:*** glycosuria, hyperuricemia, hyponatremia, increased alkaline phosphatase, thirst, vitamin B12 deficiency, weight increase, weight decrease; ***Musculoskeletal:*** arthralgia, arthritis aggravated, arthropathy, cramps, fibromyalgia syndrome, hernia, polymyalgia rheumatica; ***Nervous System/Psychiatric:*** anorexia, apathy, appetite increased, confusion, depression aggravated, dizziness, hypertonia, nervousness, hypoesthesia, impotence, insomnia, migraine, migraine aggravated, paresthesia, sleep disorder, somnolence, tremor, vertigo, visual field defect; ***Reproductive:*** dysmenorrhea, menstrual disorder, vaginitis; ***Respiratory:*** asthma aggravated, coughing, dyspnea, larynx edema, pharyngitis, rhinitis, sinusitis; ***Skin and Appendages:*** acne, angioedema, dermatitis, pruritus, pruritus ani, rash, rash erythematous, rash maculo-papular, skin inflammation, sweating increased, urticaria; ***Special Senses:*** otitis media, parosmia, taste loss, taste perversion; ***Urogenital:*** abnormal urine, albuminuria, cystitis, dysuria, fungal infection, hematuria, micturition frequency, moniliasis, genital moniliasis, polyuria; ***Visual:*** conjunctivitis, vision abnormal. Endoscopic findings that were reported as adverse events include: duodenitis, esophagitis, esophageal stricture, esophageal ulceration, esophageal varices, gastric ulcer, gastritis, hernia, benign polyps or nodules, Barrett's esophagus, and mucosal discoloration. Postmarketing Reports – There have been spontaneous reports of adverse events with postmarketing use of esomeprazole. These reports have included rare cases of anaphylactic reaction. Other adverse events not observed with NEXIUM, but occurring with omeprazole can be found in the omeprazole package insert, **ADVERSE REACTIONS** section. **OVERDOSAGE** A single oral dose of esomeprazole at 510 mg/kg (about 103 times the human dose on a body surface area basis), was lethal to rats. The major signs of acute toxicity were reduced motor activity, changes in respiratory frequency, tremor, ataxia, and intermittent clonic convulsions. There have been some reports of overdosage with esomeprazole. Reports have been received of overdosage with omeprazole in humans. Doses ranged up to 2,400 mg (120 times the usual recommended clinical dose). Manifestations were variable, but included confusion, drowsiness, blurred vision, tachycardia, nausea, diaphoresis, flushing, headache, dry mouth, and other adverse reactions similar to those seen in normal clinical experience (see omeprazole package insert-**ADVERSE REACTIONS**). No specific antidote for esomeprazole is known. Since esomeprazole is extensively protein bound, it is not expected to be removed by dialysis. In the event of overdosage, treatment should be symptomatic and supportive. As with the management of any overdose, the possibility of multiple drug ingestion should be considered. For current information on treatment of any drug overdose, a certified Regional Poison Control Center should be contacted. Telephone numbers are listed in the Physicians' Desk Reference (PDR) or local telephone book.

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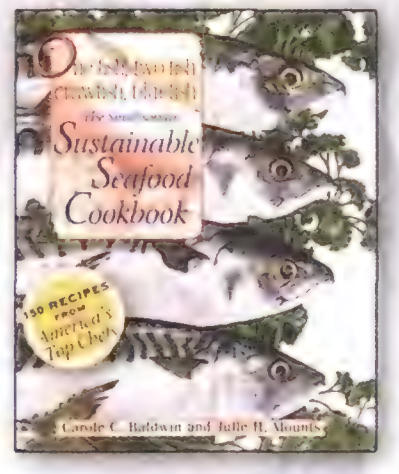
One Fish, Two Fish, Crawfish, Bluefish



The Smithsonian Sustainable Seafood Cookbook
Carole Baldwin & Julie Mounts

Earth's oceans were once thought to be inexhaustible sources of food, but we now know that they cannot sustain the demands we are placing on them. Overfishing has led to the depletion of once abundant fish and shellfish species. Rather than suggest avoiding consumption of seafood for conservation purposes, Carole Baldwin and Julie Mounts present an array of U.S. seafood species to choose from that are fished or farmed in an ecologically sound manner. Furthermore, they have assembled over 150 delicious recipes from America's top chefs based on these species. By diversifying our seafood consumption, we can lessen the demand for problematic species and distribute the burden among a broad spectrum of well-managed stocks—and still prepare delicious meals!

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A Sampling of Chefs and Their Restaurants

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Thomas Keller
The French Laundry, Yountville, CA

Charles Palmer & Dante Boccuzzi
Aureole, New York, NY

Emeril Lagasse
Emeril's Restaurant, New Orleans, LA

Jacques Pepin
Jacques Pepin, Inc., Madison, CT

Craig Stoll
Delfina, San Francisco, CA

Brad Thompson
Mary Elaine's at The Phoenician, Scottsdale, AZ

Wolfgang Puck
Spago's, Beverly Hills, CA

Michel Richard
Citronelle, Washington, DC

Charlie Trotter
Charlie Trotter's, Chicago, IL

Robert Waggoner
Charleston Grill, Charleston, SC

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Chez Panisse, Berkeley, CA

Smithsonian Books 800.233.4830

About 40 percent of the planes to be displayed will be military aircraft. Clockwise, from top right: the Lockheed X-35B, capable of short takeoffs, supersonic speed and vertical landings; the entirely restored *Enola Gay*, the B-29 Superfortress that dropped an atomic bomb on Hiroshima in 1945; and the World War II-era U.S. Navy Corsair and shark-mouthed Army Air Corps' P-40E.

been the first pressurized bomber, but does not mention atomic bomb casualties.

The new exhibit has prompted protests. In Japan, an atomic-bomb survivor group said this past August that displaying the aircraft is insensitive to victims of the atomic bombing. In the United States, an eclectic coalition of nuclear weapons opponents charged in a petition last month that omitting casualties of the atomic bombings and the larger debate over use of the bombs would make the weapons more likely to be used in the future. The petition signees include anti-Vietnam War activist Daniel Ellsberg and novelist E. L. Doctorow. NASM's director, Gen. John R. (Jack) Dailey, a former Marine Corps pilot, said, "We're going to present the aircraft primarily in terms of its technical capabilities, and leave the interpretation as to how it was used to the visitor."

Among the other craft to go on display this month is the space shuttle *Enterprise*. Though it never reached outer space, the shuttle served as a test vehicle for atmospheric flights and landings. There's a Lockheed SR-71 Blackbird, the Air Force spy plane; though nearly 40 years old, it still holds the record as the fastest, highest-flying operational jet ever built. (In 1990, it streaked more than 2,000 miles per hour across the continental United States in 1 hour 7 minutes, not including takeoff and landing.) Also on view will be the Cessna 180 *Spirit of Columbus*, in which Geraldine Mock made history in 1964 as the first female pilot to fly around the world.

Inside the Udvar-Hazy Center, at first you feel dwarfed by the soaring roof and seemingly endless expanse. A catwalk, or "skyway," suspended from the ceiling appears to float in midair. The airplanes hanging high up in the rafters don't make much of an impression from the floor, but when you're up on the skyway, they look as though they're zooming past you within arm's reach. Suspended close to the ground is a Chance Vaught F4U Corsair. With its gear down and its left wing dipping for a steep bank, it seems to swoop with intent. "It's set up for a carrier landing," says Dailey, who joined the Marines in 1956 to fly Corsairs, as his father had done in World War II and Korea. "The long nose of the aircraft meant you essentially had to be in a turn all the way to touchdown so that you could see the landing signal officer between the nose and the wing."

IT'S ALMOST 2 A.M. when the Focke Wulf convoy turns into the Udvar-Hazy Center entrance. Now an obstacle appears: a stop sign on the left side of the road stands in the way of the airplane's left wingtip. Two men jump out of a van, seize the sign and yank it out of the ground. The convoy rolls on. (They would replace the sign later.) By 2:30, a crane lifts the 60-year-old warbird from the flatbed and carries it to the center of the hall, where it joins other World War II veterans. Like the other artifacts on display, the Focke Wulf has two stories to tell—its place in history and how the heck it got here. ○

CAN A SECURITY BLANKET
BE MADE OF SHEET METAL?

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We designed the first car seat to help protect children. And we invented the modern-day front crash test dummy. We were the first to make air bags available to the masses. And we introduced drivers to infrared Night Vision. Over the years, our dedication to safety has helped save countless lives.

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NIGHT VISION. ALLOW US TO SHED SOME LIGHT.

A lot of companies are using cameras these days. But only GM is using one like this: a high-powered, ferroelectric heat-sensing camera – aka, Night Vision. Offered exclusively in the Cadillac DeVille, this first-of-its-kind feature harvests thermal-imaging technology from the military to help drivers see beyond the range of low beam headlamps. By projecting infrared images onto the windshield, Night Vision can give drivers some extra time to react.

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The National Highway Traffic Safety Administration (NHTSA) gave Chevy Impala five stars for frontal crash safety, the highest government rating.**

Beneath the inviting exterior of the Saturn Ion is a mighty steel spaceframe. This reinforced safety structure helps preserve occupant space in a crash.

GM Versatrak™ is a move in the right direction. Available on the Buick Rendezvous, it adds torque to the rear wheels when conditions get slippery.

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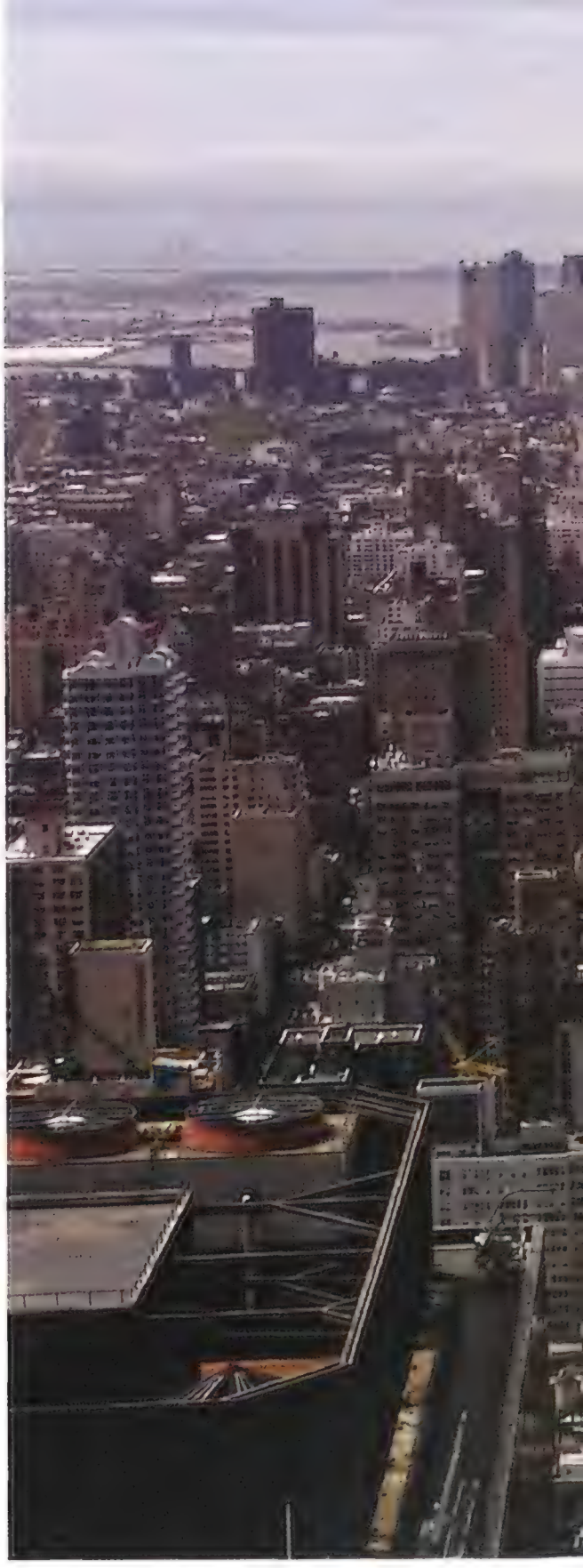
GM

CHEVROLET PONTIAC OLDSMOBILE BUICK CADILLAC GMC SATURN HUMMER SAAB

*OnStar service requires a different subscription, a compatible wireless service to be available and operating for features and functionality. Not available in all areas. See onstar.com for details. **Tested by the National Highway Traffic Safety Administration (NHTSA) as part of its New Car Assessment Program (NCAP).

AMERICAN BOUNTY

FOR A WEEK THIS PAST MAY, more than 25,000 photographers—amateurs and professionals alike—set out across the United States to document daily life in all its astonishing variety. They'd been enticed by the prospect of contributing to a project led by Rick Smolan and David Elliot Cohen, who created the popular *Day in the Life* . . . photography books. This time, said the duo, they wanted to assemble a scrapbook of the whole nation at a certain moment. In the end, dozens of editors culled 25,000 photographs from more than a million. Some 1,200 appear in *America 24/7* (DK Publishing). The project,



ORLANDO, FLORIDA—In the 30 years that Rose Juliana, 90, has had her hair done each week at Danny's Family Barber (top, left), the price, she recalls, has more than doubled . . . to $15. Photo by Gary Bogdon

SANBORN, NEW YORK—Tom Hoover makes the morning rounds (left) for his family-owned dairy, which serves more than 40,000 customers annually. Photo by Michael Groll

NEW YORK, NEW YORK—How many guys does it take to change a light bulb on a gargoyle outside the 61st floor of the 1,046-foot Chrysler Building, the Art Deco landmark? Answer: One: Kevin Kiernan (above). Photo by Philip Greenberg

CONRAD, MONTANA—Three-year-old Sheridan Johnson's sheep thrills (right) enliven the 45th annual Whoop-Up, which signals the start of Montana's rodeo season. Photo by John W. Liston, *Great Falls Tribune*

WEST DES MOINES, IOWA—Neighbors enjoy an alfresco performance by the Northview Drive Quartet. From left: Will Fandel, 10, Sarah Fandel, 12, Allison Pestotnik, 9, and Nicole Becker, 10. Photo by Gary Fandel

CHARLOTTE, NORTH CAROLINA—Bottom left: Nora Garcia, 9, and her baby sister, Vanessa, await Nora's first communion at La Iglesia de Guadalupe. Photo by Gayle Shomer Brezicki

said to be history's largest collaborative photography effort, was also something of an experiment in digital publishing, with all the photographers wielding digital cameras and submitting their work electronically to the project's Web site. "Our decision to make this an all-digital project reflects a critical tipping point in the history of photography," says Smolan. "This is the first year that Americans purchased more digital cameras than film cameras." The editors plan to publish 52 more such books next year, each with photographs taken in one of

Photographs from *America 24/7*, published by DK Publishing © 2003; Web site: www.america24-7.com

SAN CLEMENTE, CALIFORNIA—Eve Fletcher, 76 (right), has been surfing the Trestles break at San Onofre State Beach for 50 years. Photo by Rick Rickman

NORTH EAST, PENNSYLVANIA—Watercolorist Vitus J. Kaiser, 74 (below), has his work cut out for him in the apple, pear and peach orchards of Seifert's Fruit Farm. Photo by Jack Hanrahan, *Erie Times-News*

BOSTON, MASSACHUSETTS—
As if to prove that hope springs eternal, Red Sox fans stretch for a dinger (above) smacked during practice over the "Green Monster," Fenway Park's infamous left field wall.
Photo by Jim Davis

HARTFORD, CONNECTICUT—Alphanso Edwards, 60 (left), was one of the city's few African-Americans to own a business when he opened his restaurant 20 years ago. From there he keeps an eye on another venture—his laundromat.
Photo by Marc-Yves Regis II, *The Hartford Courant*

the 50 states, New York City and Washington, D.C. Though the imaging technology is state of the art, the instructions that Smolan and Cohen gave the photographers were decidedly down-home. "We encouraged them to find a household where they could hang their hats for a week and record the texture of modern family life," Smolan says. The resulting photographs portray an America both new and familiar, exotic and sublimely ordinary. They tug at your sense of what the nation was, is still and what it may become. Somehow, they're enough to make you nostalgic and hopeful at the same time. ○

LAFAYETTE, INDIANA—If Americans know where they're going, some thanks are due road workers like Tony Ybarra, preparing to stencil fresh blacktop (above, right) and to set some drivers straight.
Photo by Michael Heinz

LAKE BUENA VISTA, FLORIDA—It might be the happiest day in the life of bride Lucy Coates of Lindenhurst, Illinois, but it's just another day on the job for Richard Gerth, 77 (right), official Fairy Tale Wedding greeter at Walt Disney World's Grand Floridian Resort.
Photo by Preston Mack

Avast, Lubbers! How Hollywood's splashy *Master and Commander* draws on the amazing exploits of a true-life Royal Navy hero, re-created by an author with his own barnacled secret

TALL SHIPS & SALTY DOGS

FROM 1792, when France declared war on Austria because of its opposition to France's three-year-old revolutionary government, to 1815, when Emperor Napoleon, having conquered most of Europe, was finally defeated near the Belgian town of Waterloo, no nation vexed French ambitions more than Great Britain. At the height of Napoleon's power, around 1811, the empire and its allies stretched from Norway to Italy, and Spain to the Russian border, and its army had 600,000 troops. Ultimately, Napoleon overreached, disastrously invading Russia in 1812. But his downfall is also credited to the Royal Navy, which ruled the seas and harried the French with its more than 200 battleships, compared with about 60 under the emperor. Napoleon would refer to Britain upon his surrender (aboard a British battleship) as the "most powerful" and "most constant . . . of my enemies."

The Royal Navy of that era is the setting of the new movie *Master and Commander: The Far Side of the World*, which draws on Patrick O'Brian's rousingly successful 20-volume serial novel, published between 1969 and 1999 (a span longer than the actual wars). As Cutler Durkee explains in "The Real 'Sea Wolf'" (page 74), O'Brian modeled the fictional Capt. Jack Aubrey on the wily Royal Navy officer Thomas Cochrane. And in "Master Storyteller" (page 77), Anthony Day reflects on O'Brian's elegant tales and the novelist's hidden past, which came to light shortly before he died in 2000.

Aubrey (played by Russell Crowe, above) was inspired by Cochrane, captain of the *Imperieuse* when he defeated the French near Marseilles in 1809 (right).

THE REAL "SEA WOLF"

The dash and courage of Thomas Cochrane, the Napoleonic era's nautical maverick, provides the spark behind the fictional Jack Aubrey - BY CUTLER DURKEE

THOMAS COCHRANE had enjoyed a spectacular year, but now the jig was up—perhaps fatally. An untested lieutenant when he was given command of his first ship—the tiny brig *Speedy*, the British Navy's equivalent of a popgun—the rangy 25-year-old, fighting Napoleon and his allies in the Mediterranean, went on to startle his superiors by capturing enemy vessels, sometimes at the rate of one or two a week. Indeed, his entries in *Speedy*'s log for 1800 read like letters home from an action-packed, if potentially lethal, summer camp:

June 16: Captured a tartan off Elba . . .
June 22: Chased a French privateer with a prize in tow . . .
June 25: . . . kept up a running fight with gunboats till after midnight . . .
July 27: Fired several broadsides at one of [three] privateers and sunk her . . .

All had gone swimmingly until May 5, 1801, when *Speedy* met *El Gamo*. Cochrane's vessel carried 44 men and 14 guns, each firing a four-pound ball. *Gamo*, a powerful Spanish warship, had 319 men and 32 guns, most of them 12-pounders. The misnamed *Speedy* could never outrun *Gamo*, and it made no sense to resist. Checkmate.

Or maybe not. That morning, Cochrane would fight one of the most dramatic ship-to-ship actions in British naval history, launch his legend as an ingenious fighting captain, and—skipping forward nearly two centuries—become a model for the hero of Patrick O'Brian's hugely successful series of novels about the British Royal Navy during the Napoleonic era. The novels are the basis of the new movie *Master and Commander: The Far Side of the World*, which stars Russell Crowe as the Cochranesque hero.

Quickly weighing his options, Cochrane sailed straight for the enemy. When *Gamo* fired a warning shot, Cochrane raised an American flag—a typical *ruse de guerre*. Confused, *Gamo* momentarily held fire. Cochrane hoisted the Union Jack, dashed alongside—the rigging of the two ships touched—aimed his guns upward and fired through *Gamo*'s

Cool and inventive under fire, Cochrane (above) also helped inspire the novels of Frederick Marryat, who served with him.

hull and decks. As his opponent's mammoth cannon, riding higher than *Speedy*'s deck, roared harmlessly overhead, Cochrane fired twice more before doing the unthinkable: handing *Speedy*'s tiller to his ship's doctor, he boarded *Gamo* with most of his remaining men. The startled Spaniards, whose captain had been killed in the melee, surrendered.

Speedy's victory was only one of a dozen or so outlandish episodes in Cochrane's epic six-decade career—one that both inspired and rivaled the daring of O'Brian's fictional hero, Capt. Jack Aubrey. Cochrane, like Aubrey, was a tall, fair-haired adventurer, at war with both Napoleon and the hidebound British naval bureaucracy. At sea, Cochrane, like his literary counterpart, was a peerless fighter, "one of the most brilliant of all frigate captains, with a marvelous combination of daring and judgment," says N.A.M. Rodger, the noted naval historian and the author of *The Safeguard of the Sea: A Naval History of Britain, 660-1649*. "He achieved extraordinary results with minimum casualties. His junior officers and men adored him, as well they might." It was on land that Cochrane got into trouble. A political radical who eventually won election to Parliament, he was, in Rodger's words, a "natural extremist" who wasn't above using his "political and social contacts to undermine his naval superiors." Like Aubrey, Cochrane got caught up in a scandal, was sentenced to public humiliation in the pillory and, in the blackest moment of his life, was dismissed from the navy in 1814. Two hundred years later, partisans on both sides still debate his guilt.

There's little doubt that Cochrane, the son of a down-on-his-luck Scottish noble, had problems with authority—especially when it was illogical, corrupt, pettifogging or merely dull. (Dean King, author of *Patrick O'Brian: A Life Revealed*, calls Cochrane "the John McEnroe of the Royal Navy.") Cochrane joined the navy at age 17. As a lieutenant early in his career, harassed by a superior, he coolly invited the man to settle the matter "in another place"—which the other took as a challenge to a duel. Officially, that insubordination cost Cochrane a slap on the wrist; unofficially, it gave him a reputation as a troublemaker. Things got worse when he bickered with Earl St. Vincent, First Lord of the Admiralty. Cochrane's next assignment gave a clue to how much trouble he was in: despite his stunning defeat of *Gamo*, he was given an old hulk and told to protect the North Sea fishing fleet. The catch: there *was* no such fleet. Cochrane called the assignment "naval exile in a tub."

Finally, in 1804, Cochrane was given a real ship, the 667-ton frigate *Pallas*, and again he showed what he could do. In quick order, he captured three rich Spanish ships, snappily outsailed a French squadron that gave chase, and returned to Plymouth Harbor with three gold candlesticks tied to his masthead. For an encore, he designed a fast-rowing galley and staged commando raids along France's Atlantic coast. Napoleon, impressed, dubbed him *le loup de mer*—the sea wolf. The British Admiralty gave Cochrane an even bigger ship, the *Imperieuse*, and told him to do the same sort of thing, but even more of it, please, in the Mediterranean.

Confronted with Cochrane's undeniable talent, the Admiralty in 1809 picked him to lead an attack against warships anchored in the French harbor of Aix Roads. Cochrane outfitted fire ships—hulks coated in tar and turpentine and designed to be set ablaze as the tide carried them toward enemy ships—and three "explosion vessels" packed with gunpowder ignited by a long fuse. Fire and explosions filled the night. At dawn, Cochrane saw a startling sight: seven French ships, stuck in the mud, helpless. All had cut their moorings to escape the conflagration.

Cochrane's tiny *Speedy* (above) defeated the leviathan *El Gamo* in 1801. Jack Aubrey refights the battle in the first O'Brian novel, *Master and Commander*.

Elated, Cochrane signaled to his own fleet—anchored several miles away—to move in. The fleet's commander, Lord Gambier, didn't budge. Cochrane signaled again. Gambier acknowledged—and stayed put. Cochrane continued signaling, with little result. (Gambier would later testify that "as the enemy was on shore, he did not think it necessary to run any unnecessary risk of the fleet, when the object of their destruction seemed to be already in hand.") Watching in exasperation as the rising tide began to free the French ships, Cochrane decided to force Gambier's hand. Knowing that if he sailed in to attack, the admiral would order him to return, Cochrane instead allowed himself to slowly drift astern until he was within range and the enemy opened fire. Gambier had little choice but to send help. Four French ships were destroyed.

CUTLER DURKEE, an editor of People, *is trying, and failing, to prevent himself from reading the O'Brian series for a third time.*

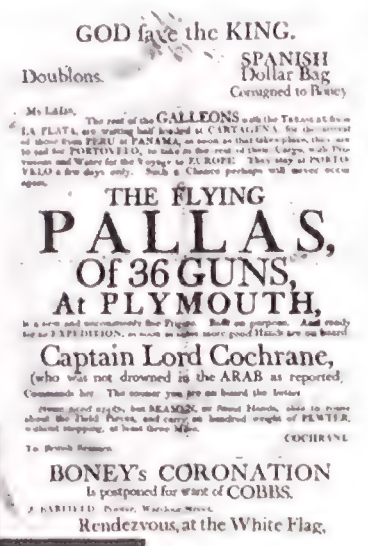
NATIONAL MARITIME MUSEUM, LONDON

Back in England, the battle was celebrated as a glorious victory. Cochrane thought otherwise and threatened to attack Gambier, publicly, in Parliament. Gambier, incensed, demanded a military trial to clear his name. The case was decided in his favor. Most of Cochrane's biographers maintain that the Admiralty rigged the outcome by, among other things, limiting the testimony of pro-Cochrane witnesses and even shipping one of them out of the country.

After the trial, the Admiralty loathed Cochrane. Elected to Parliament in 1807, his radical politics made him enemies there as well. To this day, the role his foes played in his downfall is hotly contested. What seems certain is that on February 21, 1814, a man knocked on Thomas Cochrane's front door. According to the latter, the caller was a vague acquaintance. He asked for passage out of England on a ship; Cochrane refused. When the man pleaded that he was being hounded by creditors and asked to borrow a change of clothes to disguise himself, Cochrane, taking pity, lent him an old coat and hat. End of story, according to Cochrane.

In truth, the man, named De Berenger, had perpetrated a massive fraud on the London stock exchange; and, it quickly became clear, Cochrane's uncle and stockbroker were involved. Cochrane's defenders contend that he would never have participated in such a scheme. They lay the blame for his eventual conviction on charges of stock manipulation on the fact that his case was lumped in with the other defendants—who clearly were guilty—and enemies who sought his ruin. N.A.M. Rodger is more cautious: "The evidence was circumstantial but strong," says the historian. "And he was desperate for money."

The judge, who despised Cochrane's politics, made it as difficult as possible for him to mount an effective defense. Found guilty, Cochrane was sentenced to a year in prison, a £1,000 fine and an hour on public display in the pillory. (O'Brian's hero suffers a similar fate when he becomes the unwitting patsy in a stock fraud. As Aubrey is placed in the pillory, hundreds of British sailors, gathered to offer support, doff their hats and cheer. It is the most moving moment in the 20-volume series.) Although Cochrane, in the end, was spared the pillory—authorities feared angry supporters might riot—the verdict marked the nadir of his life. "When this allegation was, by political rancour and legal chicanery, consummated in an unmerited conviction and an outrageous sentence," he wrote, "my heart for the first time sank within me, as conscious of a blow."


GOD save the KING.

SPANISH Dollar Bag

Doubloons.

THE FLYING

PALLAS,

Of 36 GUNS,

At PLYMOUTH,

Captain Lord Cochrane,

(who was not drowned in the ARAB as reported,

BONEY's CORONATION

Is postponed for want of COBBS.

Rendezvous, at the White Flag.

Cochrane (in the late 1850s) lived long enough to be captured by a new invention, the camera. Inset: A recruiting poster.

Cochrane being Cochrane, the story did not end there. After his release, he railed against his persecutors, and acting on his liberal beliefs, went off to free the world. In 1818, Chile hired Cochrane to run its navy; in 1820, he captured the Spanish stronghold of Valdivia, helping secure Chile's independence from Spain. Over the next year, he did the same for Peru. Then he helped kick the Portuguese out of Brazil. In 1825, Greece hired him to battle the Turks. But Cochrane despaired of the quality of his ships' crews—"wild and fanatic savages," he called them, "whose acts are guided by . . . heedless avidity"—and he played no decisive role in Greece's eventual liberation.

Cochrane returned to England to find that the mill wheels of the gods were grinding slowly—but perceptibly—in his favor. Sympathizers gradually got their hands on levers of power; some of his once-radical political ideas were now almost mainstream. In 1832, after appeals to the king, he was granted a "free pardon" and appointed a rear admiral of the fleet. Fifteen years later he received the letter he had dreamed of for more than three decades. "I shall shortly have to name a commander-in-chief of the North American and West Indian Station," the First Lord of the Admiralty wrote. "Will you accept the appointment?" Cochrane said yes and, at age 72, began a frustratingly peaceful three years in the Caribbean.

Cochrane died, at age 84, in 1860. He is buried in Westminster Abbey. Sixty years before, in his first summer commanding the *Speedy*, he had met his idol, Lord Nelson. Not coincidentally, Jack Aubrey too, as a young man, meets Nelson. In fact and in fiction, Britain's greatest naval hero gave both men advice they would take thoroughly to heart: "Never mind manoeuvres," Nelson said. "Always go at them." ○

MASTER STORYTELLER

Patrick O'Brian's briny novels, as teeming with life as a man-of-war, have charmed millions. But his most inventive tale was about himself ~ BY ANTHONY DAY

IT WAS A DELICIOUS DILEMMA. A new book in the series was just out. Did you snap it up at once, have a few hours of pure enjoyment, a brief and lovely time sailing with the Royal Navy in the Napoleonic Wars on the far side of the world, under a fair breeze, in good company with perhaps something by Boccherini on the violin and cello, looking forward to an island landing that might, just might, provide a glimpse of a rare booby—or did you postpone the satisfaction, lest you get to the inevitable end of the long chain of adventures too fast? You must draw out the pleasure of being swept up into yet another splendid sea chase through wind-whipped seas, yet another nicely drawn battle scene of sloops and ships of the line (those fearsome great war machines) and their desperate, motley crews, and yet more of that fine-tuned conversation between the two comrades in arms and particular friends, lucky Capt. Jack Aubrey and the surgeon-naturalist-spy Stephen Maturin.

For who knew when the aging author would cease and the anticipation of the next novel would be gone forever?

Those conflicting emotions must have struck many thousands of readers in the 1990s, when enthusiasm for Patrick O'Brian's saga surged and astonished the reading public and the publishing world. You may fairly call it the O'Brian craze. More than four million of the Aubrey-Maturin books have sold in the United States alone. They've given rise to Web sites, a newsletter, a cookbook re-creating the vittles—like soused hog's face—that his seamen relished, and CDs of the music that O'Brian had Aubrey, who scratched away on the violin, and Maturin, a cellist, play together.

O'Brian published the first of the 20 Aubrey-Maturin novels, *Master and Commander*, in 1969. Reviewing the 12th, *The Letter of Marque*, in 1991, Richard Snow, editor of *American Heritage* magazine, declared on the front page of the *New York Times Book Review* that the series constituted "the best historical novels ever written." Fans have been as disparate as Tom Stoppard and Walter Cronkite, David Mamet and Iris Murdoch. O'Brian was frequently described in print as a

Adored for his sea-soaked prose, O'Brian (aboard the *Rose* in New York City at age 80 in 1995) wasn't much of a sailor.

reclusive Irish gentleman who had repaired to a village in southern France, where he wrote his elegant prose in longhand. In 2000, O'Brian died at the age of 85 while working on the 21st installment, leaving an unraveling secret: he was not who he said he was. Just as he had invented his addictive tales, he had, it turned out, invented himself.

I was a senior correspondent at the *Los Angeles Times* when I met O'Brian in California in 1995 during his tour to promote the 17th novel in the series, *The Commodore*. He answered respectful questions from Robert Hass, soon to be named poet laureate of the United States, in San Francisco's Herbst Theater, before an audience of 900. At the University of California at Los Angeles, a standing-room-only audience listened as Charlton Heston questioned the then 80-year-old author and with gravity read aloud the scene in *The Reverse of the Medal* (No. 11) in which Aubrey is put in the pillory after being wrongly accused of rigging the stock market. A woman in the audience, complimenting O'Brian on his female characters, asked how he had gained such insight, since he had kept himself "locked up" so many years. "But," O'Brian said with a bright smile exploding across his tan, fierce-eyed old man's taut face, "I was at one time young!"

The O'Brian those audiences saw was the O'Brian he wanted to be: smartly if mysteriously educated, upper-class Anglo-Irish, tart of tongue and insistent on holding the advantage in talk, and prickly. He told the UCLA audience that the reading of his youth was Smollett, Swift, Richardson, Fielding, Johnson and Gibbon. "Gibbon wrote a most noble English," O'Brian said, adding, "It has a roll and a splendor." (Add Jane Austen to that list and you have the vibrant source of O'Brian's clear, precise and slightly old-fashioned prose.)

The day after O'Brian's UCLA appearance, I saw the same careful pose and also a more open man. He was profoundly interested in natural history, so at his request we went to the Page Museum at the La Brea Tar Pits in Los Angeles. "Has it, then, no zygomatic arch?" O'Brian asked an obliging curator, who had shown him the fossilized jaw of *Smilodon fatalis*, the saber-toothed tiger. No, she said, it does have one, and handed him the specimen. Outside, he and his soft-voiced wife, Mary, both looking age-worn and vulnerable, walked in the park and, like children, poked sticks into the little tar volcanoes bubbling up in the dirt. His publisher had asked interviewers not to inquire into O'Brian's private life. Like nearly all others, I acquiesced; I was more interested in current impressions than history.

In 1998, London journalists disclosed that O'Brian had a secret past—the disclosures reportedly distressed O'Brian, but he did not deny them—and the full story was then brought out with finesse by the American writer Dean King in his 2000 book, *Patrick O'Brian: A Life Revealed,* published shortly after O'Brian's death. King had been an admirer of O'Brian, publishing a lexicon and a geographical guide to the Aubrey-Maturin novels, before embarking on a biography. King found that O'Brian was not the aloof antiquarian he sometimes appeared to be. And he certainly wasn't Irish. Richard Patrick Russ was born in Chalfont St. Peter, England, in 1914. His father, Charles, was a physician but was not as financially successful as his own father, a furrier from eastern Germany. Patrick's mother, who was also English, died when he was 3. At 25, Patrick, already a novelist, abandoned his wife and their two children, the younger then dying of spina bifida. At 30, he changed his name to O'Brian, shedding his German-English heritage for one Anglo-Irish, and married the former Mary Wicksteed, an Englishwoman divorced from Count Dmitri Tolstoy, a barrister in England. For some years, O'Brian was in touch with his surviving son, Richard Russ, by his first wife, but they stopped speaking in 1964, King writes. (Mary died in 1998.)

The striking thing, in retrospect, about O'Brian's life is the single thread that runs through it: he was a creator of tales, imaginary worlds that resonated with the pulse of an often painful personal experience. He began in his teens, writing stories about animals with rather human traits, for English boys' magazines. In his early 20s, Oxford

Before he became O'Brian, Patrick Russ (in 1939 at age 25, with son Richard) lived in Suffolk, England, with his wife and two children, whom he abandoned.

CLOUD THE ISSUE

OR CLEAR THE AIR?

The issue of global warming has given rise to heated debate. Is the burning of fossil fuels and increased concentration of carbon dioxide in the air a serious threat or just a lot of hot air? Shell believes that action needs to be taken now, both

PROFITS & PRINCIPLES.

by companies and their customers. We are actively managing greenhouse gas emissions in our worldwide operations such that by 2010 they are still 5% or more below 1990 levels, even while we grow our business. We are also working to increase the supply of natural gas, a cleaner option for electricity generation and home heating, and offering alternative energy sources such as solar, hydrogen and wind power. It's all part of our commitment to contribute to

IS THERE A CHOICE?

sustainable development, balancing economic progress with environmental care and social responsibility. Solutions for the future won't come easily, particularly in today's climate, but you can't find them if you don't keep looking.

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University Press published his novel (under the name Russ) set in British India, *Hussein: An Entertainment*, the first time that venerable press had ever published a contemporary work of fiction. Then the war came, and O'Brian began it, as did Mary, working as an ambulance driver during the blitz. Later, the two reportedly did some sort of intelligence work, perhaps communicating with Resistance members in France.

After the war, they lived in a cottage on a sheep farm in remotest Wales. He wrote stories and a novel, *Testimonies*, revealing a writer of anxiety and apprehension, with hints of despair, who'd forged a precise and delicate style. The poet Delmore Schwartz praised the novel as a triumph, saying it was finer than some works by Waugh, Hemingway and Steinbeck. In 1949, the O'Brians moved to the French-Catalan village of Collioure under the arms of the Pyrenees. He did translations from the French (including Simone de Beauvoir's novels and Henri Charrière's *Papillon*, about a prisoner at Devil's Island) and produced well-received biographies of Picasso and of the British naturalist Sir Joseph Banks.

History, wrote O'Brian (at the 1995 party aboard the *Rose*, with his second wife, Mary, and editor Starling Lawrence), has been shaped decisively by sea battles.

The Aubrey-Maturin series came about almost by accident. In 1956, O'Brian published *The Golden Ocean*, a novel for young readers about the Royal Navy in the Napoleonic Wars. A decade later, a Philadelphia publishing house, J. B. Lippincott Company, was hunting for someone to write a kind of sequel to the popular Captain Hornblower sea novels by C. S. Forester, who had died in 1966. The firm approached O'Brian, who rose to the challenge with *Master and Commander*. (Though the movie borrows the title of the first novel, it dramatizes events from more than one.) He hadn't planned on writing a continuing saga, but the first was such a success that he wrote another, and so on. A British publishing firm, William Collins (later to become HarperCollins), joined in, and W.W. Norton purchased the series' U.S. rights in 1989.

The friendship between Aubrey (bluff, hearty, inescapably English and most at home on the sea) and Maturin (detached, ironical, secretive and terrestrial) is the emotional hinge on which the series swings. "I look upon them rather as positive and negative, the exchange between which expresses what I have to say," O'Brian said at the reading in San Francisco. The constancy of friendship, the virtue of loyalty and the eventual triumph of goodness are essential elements in the books' appeal. It is as if O'Brian created in his saga the goodness, the just outcome, he could not wholly achieve in life. In the books there is trouble, there is danger, there is indeed betrayal—but not by the principals. Like the discursive talks Aubrey and Maturin engage in over dinner and wine in the captain's broad-windowed cabin, one's encounters with his novels are, above all, *agreeable*. That is probably the secret of his great success. When the noisy, intrusive contemporary world is reflected so accurately by many writers of fiction, O'Brian offers a way out, yes, an escape. His charm lies in the way he created an artificial world in which the reader happily believes.

The Aubrey-Maturin novels, the Oxford don and literary critic John Bayley wrote to me in response to an inquiry, can be considered "an elevated parodic genre narrative. His characters, even his minor ones, are superbly done." Bayley, who with his late wife, the novelist Iris Murdoch, often praised the series, added that "brilliant as it is, the work is in the nature of an extended parody," with the obvious influence being that of Jane Austen. Bayley also suggested that O'Brian "is a kind of humorous writer, perhaps a distant connection of P. G. Wodehouse, even of Wodehouse's schoolmate Raymond Chandler, who I read with the same enjoyment, and for something like the same reasons."

Has the reception of O'Brian's work been damaged by the revelations about his real life? When the news broke, Fleet Street turned on him—the *Sunday Times* of London called him a monster, a coward, a hypocrite. But the prevailing sentiment is more likely that of the *Economist* in its fond obituary, which suggested O'Brian's literary persona was a deception "of the most innocent kind."

Will O'Brian's work endure? *The Commodore* begins: "Thick weather in the chops of the Channel and a dirty night, with the strong north-east wind bringing the rain from the low sky and racing cloud: Ushant somewhere away on the starboard bow, the Scillies to the larboard, but never a light, never a star to be seen; and no observation for the last four days." It is hard to imagine that coming generations of readers will not be beguiled. ○

ANTHONY DAY, for 18 years the editorial page editor of the Los Angeles Times *until 1989, now lives in Santa Fe, New Mexico.*

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PATROLLING THE JUNE SKIES above Long Island Sound's tiny Falkner Island, one roseate tern spies another flying 15 feet below with a fish in its beak. The first bird dives, grabs the fish and repairs to a nearby pebbly beach to feed its chicks.

"That's Supertern," says biologist Dave Shealer of the fish thief. "Good catch!" says Shealer's colleague, Jeff Spendelow, who, peering through a spotting scope, reads an identifying number on a band around the bird's leg. The men—Shealer, a 37-year-old behavioral ecologist based at Loras College in Dubuque, Iowa, and 53-year-old Spendelow, a U.S. Geological Survey research biologist at Maryland's Patuxent Wildlife Research Center—are shoulder to shoulder in a small bird blind on the island's north end.

Thanks to these two researchers, Supertern and several other Falkner Island roseate terns are among science's most celebrated practitioners of kleptoparasitism, or food theft, from the Greek word *kleptes*, meaning thief. The practice of stealing food to feed themselves, their young or a mate—common to other bird species such as frigate birds, parasitic jaegers, skuas and several types of gulls—was first noticed in roseate terns in 1973. But Shealer and Spendelow's recently published research has shed new light on this unorthodox behavior. They have found that, contrary to conventional wisdom, crime *does* pay—at least among roseate terns.

Spendelow and Shealer's "laboratory," about three miles off the Connecticut coast, is a slip of an island consisting of four and a half acres of rocky beach, poison ivy, six-foot-high black mustard plants and staghorn sumac trees. The north end of the banana-shaped island rises 60 feet from the sea like the prow of a ship; the island's midsection is marked by a 200-year-old working lighthouse. But birds dominate the

On Falkner Island (right), part of the U.S. Fish and Wildlife's Stewart B. McKinney National Wildlife Refuge, researchers discovered that certain roseate terns (such as master fish thief Supertern, above) have made stealing a way of life.

TO CATCH A THIEF

When biologists study food theft among endangered roseate terns, they find that crime most definitely pays

BY ADELE CONOVER

PHOTOGRAPHS BY LYNDA RICHARDSON

landscape: nearly 3,000 pairs of common terns and 45 pairs of their smaller, endangered cousins, the roseates, make their nest here. Much appreciated by bird lovers, roseates have a slightly rosy breast that glows "with the faintest blush of some rare seashell," wrote early 20th-century ornithologist Arthur C. Bent. Their effortlessness in the air prompted John James Audubon to describe them as "the Hummingbirds of the sea."

Spendelow first began studying roseates on Falkner 25 years ago. In 1987, he devised an ingenious system of banding that did not require recapturing the birds to identify them: unique combinations of colored plastic bands that can be seen with a spotting scope from as far as 75 yards away. Spendelow estimates that he and his colleagues have outfitted more than 50,000 roseates in Connecticut, Massachusetts and New York with these bands. Using this system, Spendelow has been able to make detailed histories of thousands of individual roseates and monitor the ups and downs of their population.

In 1994, Spendelow invited Shealer to come to Falkner. Shealer had just spent four summers researching how roseates in Puerto Rico forage for food and had observed some terns stealing fish from others. He wondered whether this was normal behavior or just opportunism. Shealer felt that Spendelow's banding system would enable him to distinguish one bird from another and thus answer this question.

During the next four years on Falkner, Shealer would fold his 6-foot-1 frame into the bird blind for a total of 774 hours to watch the terns. "When you get to know them as individuals, you can't help but anthropomorphize," he says. "There's one that abuses her offspring, one that [acts like he's] God's gift to terns, another that loves mackerel. There are devoted parents, and a male that courts anything that moves."

Shealer found that kleptoparasitism is indeed a way of life for some roseates, if only for two males and eight females, or 4 percent of what was then Falkner Island's nesting roseate population. The thieves employed a number of scams and tricks. Supertern and a female dubbed the Good Mother swooped on their quarry from above or slashed from below. Other klepto terns—sly as purse snatchers—preferred to jump their victims on the ground. A few crafty females bided their time until a neighbor arrived home with a fish, then blocked the neighbor's access to its chicks and grabbed the fish. "One brazen female actually solicited sex repeatedly," Shealer adds. She would flirt with a fish-laden male by being submissive and begging, behavior that is a prelude to mating. "When the foolish male would fall for it and attempt a mounting on her back in preparation for copulation," says Shealer, "she tilted her head upward, snatched the fish from the distracted suitor and took off without so much as a backward glance."

Tucson, Arizona-based freelancer ADELE CONOVER has written for this magazine about everything from bears to worms. LYNDA RICHARDSON photographed wild Cuba for the May issue.

New research suggests that kleptoparasitism, or food stealing (a roseate tern demonstrates above), is carried out not by the laziest roseates but by the most skilled.

Despite creating additional nesting areas (above), Falkner Island tern expert Jeff Spendelow (bearded, below left) has watched the roseate population drop by nearly 50 percent during the past two years, mainly due to night herons feeding on eggs and chicks (below, right). Spendelow's banding system enabled Dave Shealer (bottom, in blind) to study food theft behavior in the roseates.

Hard hats and raincoats are required gear on Falkner Island for volunteer Stacie Faust (above, listening for peeps, a sign that a chick will soon hatch) and fellow Connecticut Audubon research assistants (below, from left, Hilary Cresko, Faust, and Wendy Grus). Common terns routinely greet visitors with a barrage of well-aimed droppings, loud screeches and pecks to the head.

There were other surprises. Shealer and Spendelow often watched Supertern bring several fish in rapid succession to his mate. Once she was satiated, he would then fly off to visit other, single females. After copping a fish from some unsuspecting tern, he'd offer the stolen fish—the tern equivalent of a box of chocolates—to female after female, until he won what biologists call "extra pair copulation." Spendelow says he "wouldn't be surprised if Supertern fathered half of the chicks" of single females on the island.

Klepto terns also make good parents. Honest terns bring their chicks only two young three-inch-long sand lance fish per hour. But Supertern, for example, can bring his mate's offspring up to 20 per hour. Consequently, Supertern and the nine other thieving parents have healthier chicks, which are far more likely to survive and have chicks of their own. This, says Shealer, makes the outlaws the big winners in the game of life, where success is measured by the ability of individuals to pass their genes along to the following generation.

But do the birds also pass along their thieving ways? Apparently not. Shealer and Spendelow have yet to see the offspring of a klepto tern resort to stealing. Many questions about kleptoparasitism remain: Why, for example, do terns steal rather than fish for themselves? What are the effects on honest roseates in the population?

Sitting in the blind, watching over the terns, Shealer offers a few speculations. Just as no two humans are alike, he says, neither are two birds. A bird that sees its neighbor fly in with a fish might be tempted to steal it, he says, "but I believe that kleptoparasitism is not just a matter of opportunism." Nor, he says, is it laziness—a way to avoid the up to an hour-long, 25-mile round-trip flight out to sea to search for sand lances. Perhaps, Shealer speculates, some birds simply discover that they are good at stealing. It does, after all, require exquisite skill, speed and timing. Others might lack the ability and give up after trying once or twice.

Whatever motivates terns to steal, it's clear that "kleptoparasitism is not a loser's strategy," says Shealer. ○

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The Elusive Marc Chagall

With his wild and whimsical imagery, the Russian-born artist bucked the trends of 20th-century art – BY JOSEPH A. HARRISS

DAVID MCNEIL fondly remembers the day in the early 1960s his father took him to a little bistro on Paris' Île St. Louis, the kind of place where they scrawl the menu in white letters on the mirror behind the bar, and masons, house painters, plumbers and other workingmen down hearty lunches along with *vin ordinaire*. Wearing a beret, a battered jacket and a coarse, checkered shirt, his father—then in his mid-70s—fit in perfectly. With conversation flowing easily among the close-set tables, one of the patrons looked over at the muscular, paint-splotched hands of the man in the beret. "Working on a place around here?" he asked companionably. "Yeah," replied McNeil's father, the artist Marc Chagall, as he tucked into his appetizer of hard-boiled egg and mayonnaise. "I'm redoing a ceiling over at the Opéra."

Chagall, the Russian-born painter who went against the current of 20th-century art with his fanciful images of blue cows, flying lovers, biblical prophets and green-faced fiddlers on roofs, had a firm idea of who he was and what he wanted to accomplish. But when it came to guarding his privacy, he was a master of deflection. Sometimes when people approached to ask if he was that famous painter Marc Chagall, he would answer, "No," or more absurdly, "I don't think so," or point to someone else and say slyly, "Maybe that's him." With his slanting, pale-blue eyes, his unruly hair and the mobile face of a mischievous faun, Chagall gave one biographer the impression that he was "always slightly hallucinating." One of those who knew him best, Virginia Haggard McNeil, David's mother and Chagall's companion for seven years, characterized him as "full of contradictions—generous and guarded, naïve and shrewd, explosive and secret, humorous and sad, vulnerable and strong."

Chagall himself said he was a dreamer who never woke up. "Some art historians have sought to decrypt his symbols," says Jean-Michel Foray, director of the Marc Chagall Biblical Message Museum in Nice, "but there's no consensus on what they mean. We cannot interpret them because they are simply part of his world, like figures from a dream." Pablo Picasso, his sometime friend and rival ("What a genius, that Picasso," Chagall once joked. "It's a pity he doesn't paint"), marveled at the Russian's feeling for light and the originality of his imagery. "I don't know where he gets those images. . . . " said Picasso. "He must have an angel in his head."

Throughout his 75-year career, during which he produced an astounding 10,000 works, Chagall continued to incorporate figurative and narrative elements (however enigmatic) into his paintings. His warm, human pictorial universe, full of personal metaphor, set him apart from much of 20th-centu-

"Art seems to me to be above all a state of soul," wrote Chagall (left, in 1942 in his studio in New York City) in his 1931 memoir, *My Life*. His lyrical *Midsummer Night's Dream* (right), from 1939, plays on the theme of Beauty and the Beast.

Chagall (with his wife Bella and their daughter, Ida, in his Paris studio in 1924) called himself a dreamer who never woke up.

ry art, with its intellectual deconstruction of objects and arid abstraction. As a result, the public has generally loved his work, while the critics were often dismissive, complaining of sentimentality, repetition and the use of stock figures.

A major retrospective of Chagall's unique, often puzzling images was recently on view at the San Francisco Museum of Modern Art, following a highly acclaimed run at the Grand Palais in Paris. The first comprehensive exhibition of Chagall's paintings since 1985 brought together more than 150 works from all periods of his career, many never before seen in the United States, including cloth-and-paper collages from the private collection of his granddaughter Meret Meyer Graber. The exhibition, says Foray, the chief organizer of the show, "offered a fresh opportunity to appreciate Chagall as the painter who restored to art the elements that modern artists rejected, such as allegory and narrative—art as a comment on life. Today he is coming back strong after a period of neglect, even in his home country." Retrospectives are planned for 2005 at the Museum of Russian Art in St. Petersburg and at the State Tretiakov Gallery in Moscow.

Movcha (Moses) Chagal was, as he put it, "born dead" on July 7, 1887, in the Belorussian town of Vitebsk, near the Polish border. His distraught family pricked the limp body of their firstborn with needles to try to stimulate a response. Desperate, they then took the infant outside and put him in a stone trough of cold water. Suddenly the baby boy began to whimper. With that rude introduction to life, it's no wonder that Marc Chagall, as he later chose to be known in Paris, stuttered as a boy and was subject to fainting. "I was scared of growing up," he told Virginia McNeil. "Even in my twenties I preferred dreaming about love and painting it in my pictures."

Chagall's talent for drawing hardly cheered his poor and numerous family, which he, as the eldest of nine children, was expected to help support. His father, Khatskel-Mordechai Chagal, worked in a herring warehouse; his mother, Feiga-Ita Chernina, ran a small grocery store. Both nominally adhered to Hasidic Jewish religious beliefs, which forbade graphic representation of anything created by God. Thus Chagall grew up in a home devoid of images. Still, he pestered his mother until she took him to an art school run by a local portraitist. Chagall, in his late teens, was the only student who used the vivid color violet. A pious uncle refused to shake his hand after he began painting figures.

For all his subsequent pictorial reminiscing about Vitebsk, Chagall found it stifling and provincial—"a strange town, an unhappy town, a boring town," he called it in his memoirs. In 1906, at age 19, he wangled a small sum of money from his

Author JOSEPH A. HARRISS writes about art and culture from his home in Paris. His article on Louvre copyists ran in October 2002.

Chagall and Bella, his partner and muse for 30 years, float magically over their hometown of Vitebsk in *Above the Town*, 1914-18.

father and left for St. Petersburg, where he enrolled in the drawing school of the Imperial Society for the Protection of Fine Arts. But he hated classical art training. "I, poor country lad, was obliged to acquaint myself thoroughly with the wretched nostrils of Alexander of Macedonia or some other plaster imbecile," he recalled. The meager money soon ran out, and although he made a few kopecks retouching photographs and painting signs, he sometimes collapsed from hunger. His world broadened in 1909 when he signed up for an art class in St. Petersburg taught by Leon Bakst, who, having been to Paris, carried an aura of sophistication. Bakst indulged Chagall's expressive, unconventional approach to painting and dropped names, exotic to the young man's ears, such as Manet, Cézanne and Matisse. He spoke of painting cubes and squares, of an artist who cut off his ear.

"Paris!" Chagall wrote in his autobiography. "No word sounded sweeter to me!" By 1911, at age 24, he was there, thanks to a stipend of 40 rubles a month from a supportive member of the Duma, Russia's elective assembly, who had taken a liking to the young artist. When he arrived, he went directly to the Louvre to look at the famous works of art there. In time he found a room at an artists' commune in a circular, three-story building near Montparnasse called La Ruche (The Beehive). He lived frugally. Often he'd cut a herring in half, the head for one day, the tail for the next. Friends who came to his door had to wait while he put on his clothes; he painted in the nude to avoid staining his only outfit.

At La Ruche, Chagall rubbed shoulders with painters like Fernand Léger, Chaim Soutine, Amedeo Modigliani and Robert Delaunay. True to his nature as a storyteller, however, he seemed to have more in common with such writers as French poet Guillaume Apollinaire, who described Chagall's work as "supernatural." Another friend, Blaise Cendrars, a restless, knockabout writer, penned a short poem about Chagall: "Suddenly he paints / He grabs a church and paints with a church / He grabs a cow and paints with a cow."

Many consider Chagall's work during his four-year stay in Paris his most boldly creative. Reconnoitering the then-prevalent trends of Cubism and Fauvism, he absorbed aspects of each into his own work. There was his Cubist-influenced *Temptation (Adam and Eve)*; the disconcerting *Introduction,* with a seven-fingered man holding his head under his arm; and the parti-colored *Acrobat*, showing Chagall's fondness for circus scenes. At La Ruche he also painted his explosive *Dedicated to My Fiancée,* which he tossed off in a single night's feverish work and later submitted to a major Paris exhibition. It took some artful persuasion on his part to convince the show's organizers that the topsy-turvy mix of hands, legs and a leering bull's head was not, as they contended, pornographic.

Returning to Vitebsk in 1914 with the intention of staying

only briefly, Chagall was trapped by the outbreak of World War I. At least that meant spending time with his fiancée, Bella Rosenfeld, the beautiful, cultivated daughter of one of the town's wealthiest families. Bella had won a gold medal as one of Russia's top high-school students, had studied in Moscow and had ambitions to be an actress. But she had fallen for Chagall's strange, almond-shaped eyes and often knocked on his window to bring him cakes and milk. "I had only to open the window of my room and blue air, love and flowers entered with her," Chagall later wrote. Despite her family's worries that she would starve as the wife of an artist, the pair married in 1915; Chagall was 28, Bella, 23. In his 1914-18 *Above the Town* (one of his many paintings of flying lovers), he and Bella soar blissfully above Vitebsk.

In 1917 Chagall embraced the Bolshevik Revolution. He liked that the new regime gave Jews full citizenship and no longer required them to carry passports to leave their designated region. And he was pleased to be appointed commissar for art in Vitebsk, where he started an art school and brought in avant-garde teachers. But it soon became clear that the revolutionaries preferred abstract art and Socialist Realism—and how, they wondered, did the comrade's blue cows and floating lovers support Marxism-Leninism? Giving up his job as commissar in 1920, Chagall moved to Moscow, where he painted decorative panels for the State Jewish Chamber Theater. But ultimately unhappy with Soviet life, he left for Berlin in 1922 and settled in Paris a year and a half later along with Bella and their 6-year-old daughter, Ida.

"Suddenly he paints," wrote poet Blaise Cendrars of Chagall. "He grabs a church and paints with a church / He grabs a cow and paints with a cow." Chagall's *Clown with Donkey* was part of a circus series done in Paris in 1927. Chagall and Virginia McNeil (below, in 1948 in High Falls, New York) lived together for seven years.

In Paris, a new door opened for Chagall when he met the influential art dealer Ambroise Vollard, who commissioned him to illustrate an edition of the poetic classic the *Fables* of La Fontaine. Chauvinistic French officials cried scandal over the choice of a Russian Jew, a mere "Vitebsk sign painter," to illustrate a masterpiece of French letters. But that blew over, and Chagall went on to do a series of resonant illustrations of the Bible for Vollard.

Increasingly alarmed by Nazi persecution of the Jews, Chagall made a strong political statement on canvas in 1938 with his *White Crucifixion*. Then 51 and in his artistic prime, he portrayed the crucified Christ, his loins covered with a prayer shawl, as a symbol of the suffering of all Jews. In the painting, a synagogue and houses are in flames, a fleeing Jew clutches a Torah to his breast, and emigrants try to escape in a rudimentary boat. Not long after, in June 1941, Chagall and his wife boarded a ship for the United States, settling in New York City.

The six years Chagall spent in America were not his happiest. He never got used to the pace of New York life, never learned English. "It took me thirty years to learn bad French," he said, "why should I try to learn English?" One of the things he did enjoy was strolling through Lower Manhattan, buying strudel and gefilte fish, and reading Yiddish newspapers. His palette during these years often darkened to a tragic tone, with depictions of a burn-

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"I don't know where he gets those images . . . ," Picasso said of Chagall. "He must have an angel in his head." Chagall (below with second wife, Vava, in 1980 in Provence) painted his surreal *Time Is a River without Banks* (above) in 1930-39.

ing Vitebsk and fleeing rabbis. When Bella, his muse, confidante and best critic, died suddenly in 1944 of a viral infection at age 52, "everything turned black," Chagall wrote.

After weeks of sitting in his apartment on Riverside Drive immersed in grief, tended to by his daughter, Ida, then 28 and married, he began to work again. Ida found a French-speaking English woman, Virginia McNeil, to be his housekeeper. A diplomat's daughter, and bright, rebellious and cosmopolitan, McNeil had been born in Paris and raised in Bolivia and Cuba, but had recently fallen on hard times. She was married to John McNeil, a Scottish painter who suffered from depression, and she had a 5-year-old daughter, Jean, to support. She was 30 and Chagall 57 when they met, and before long the two were talking painting, then dining together. A few months later Virginia left her husband and went with Chagall to live in

High Falls, New York, a village in the Catskills. They bought a simple wooden house with an adjoining cottage for him to use as a studio.

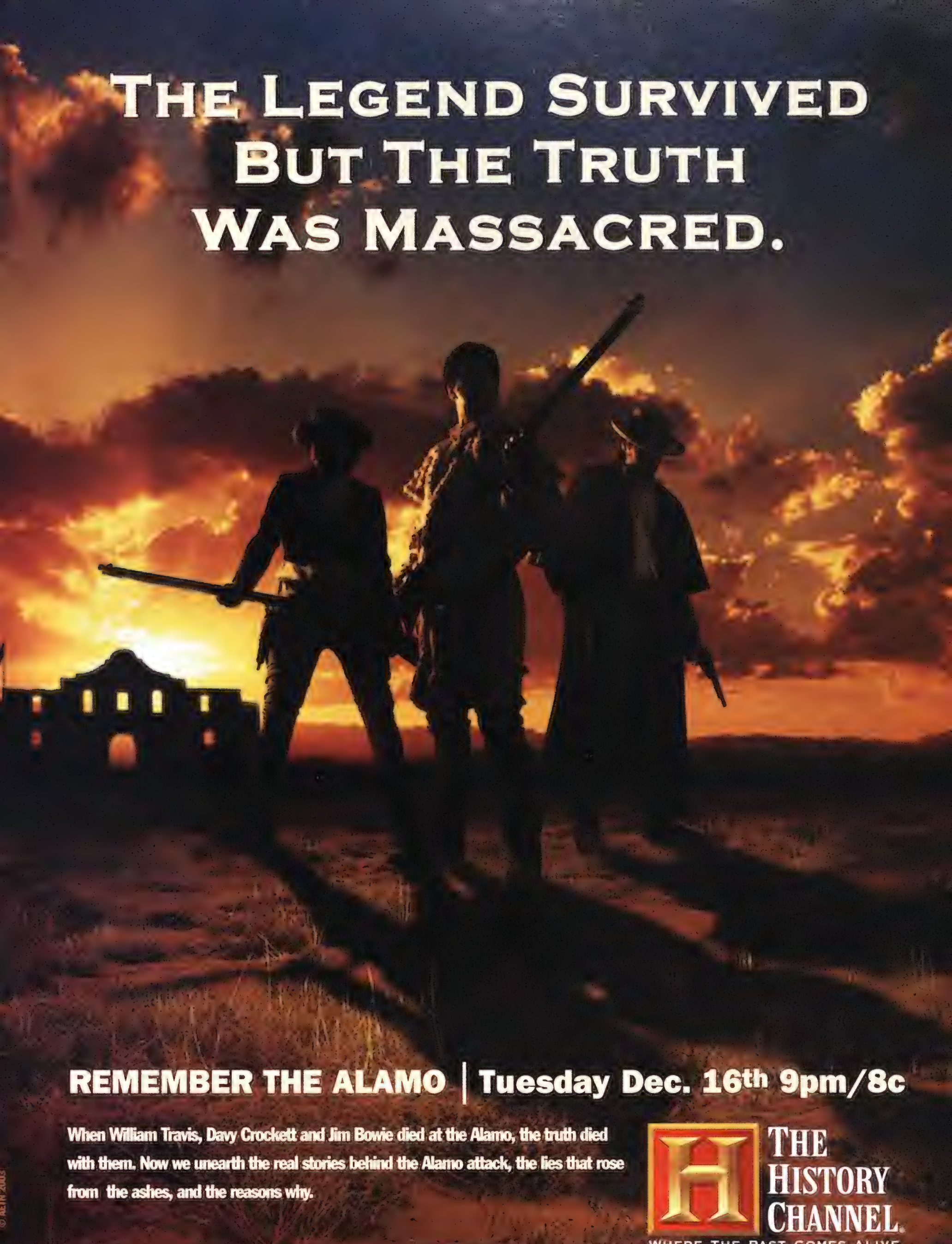
Though Chagall would do several important public works in the United States—sets and costumes for a 1942 American Ballet Theatre production of Tchaikovsky's *Aleko* and a 1945 version of Stravinsky's *Firebird,* and later large murals for Lincoln Center and stained-glass windows for the United Nations headquarters and the Art Institute of Chicago—he remained ambivalent about America. "I know I must live in France, but I don't want to cut myself off from America," he once said. "France is a picture already painted. America still has to be painted. Maybe that's why I feel freer there. But when I work in America, it's like shouting in a forest. There's no echo."

In 1948 he returned to France with Virginia, their son, David, born in 1946, and Virginia's daughter. They eventually settled in Provence, in the hilltop town of Vence. But Virginia chafed in her role, as she saw it, of "the wife of the Famous Artist, the charming hostess to Important People," and abruptly left Chagall in 1951, taking the two children with her. Once again the resourceful Ida found her father a housekeeper—this time in the person of Valentina Brodsky, a 40-year-old Russian living in London. Chagall, then 65, and Vava, as she was known, soon married.

The new Mrs. Chagall managed her husband's affairs with an iron hand. "She tended to cut him off from the world," says David McNeil, 57, an author and songwriter who lives in Paris. "But he didn't really mind because what he needed most was a manager to give him peace and quiet so he could get on with his work. I never saw him answer a telephone himself. After Vava took over, I don't think he ever saw his bank statements and didn't realize how wealthy he was. He taught me to visit the Louvre on Sunday, when it was free, and he always picked up all the sugar cubes on the table before leaving a restaurant." McNeil and his half sister, Ida, who died in 1994 at age 78, gradually found themselves seeing less of their father. But to all appearances Chagall's married life was a contented one, and images of Vava appear in many of his paintings.

In addition to canvases, Chagall produced lithographs, etchings, sculptures, ceramics, mosaics and tapestries. He also

The Legend Survived But The Truth Was Massacred.



REMEMBER THE ALAMO | Tuesday Dec. 16th 9pm/8c

When William Travis, Davy Crockett and Jim Bowie died at the Alamo, the truth died with them. Now we unearth the real stories behind the Alamo attack, the lies that rose from the ashes, and the reasons why.

THE HISTORY CHANNEL.
WHERE THE PAST COMES ALIVE

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took on such demanding projects as designing stained-glass windows for the synagogue of the Hadassah-Hebrew University Medical Center in Jerusalem. His ceiling for the Paris Opéra, painted in 1963-64 and peopled with Chagall angels, lovers, animals and Parisian monuments, provided a dramatic contrast to the pompous, academic painting and decoration in the rest of the Opéra.

"He prepared his charcoal pencils, holding them in his hand like a little bouquet," McNeil wrote of his father's working methods in a memoir that was published in France last spring. "Then he would sit in a large straw chair and look at the blank canvas or cardboard or sheet of paper, waiting for the idea to come. Suddenly he would raise the charcoal with his thumb and, very fast, start tracing straight lines, ovals, lozenges, finding an aesthetic structure in the incoherence. A clown would appear, a juggler, a horse, a violinist, spectators, as if by magic. When the outline was in place, he would back off and sit down, exhausted like a boxer at the end of a round."

Some critics said he drew badly. "Of course I draw badly," Chagall once said. "I like drawing badly." Perhaps worse, from the critics' point of view, he did not fit easily into the accepted canon of modernity. "Impressionism and Cubism are foreign to me," he wrote. "Art seems to me to be above all a state of soul. . . . Let them eat their fill of their square pears on their triangular tables!"

Notes veteran art critic Pierre Schneider, "Chagall absorbed Cubism, Fauvism, Surrealism, Expressionism and other modern art trends incredibly fast when he was starting out. But he used them only to suit his own aesthetic purposes. That makes it hard for art critics and historians to label him. He can't be pigeonholed."

When he died in Saint Paul de Vence on March 28, 1985, at 97, Chagall was still working, still the avant-garde artist who refused to be modern. That was the way he said he wanted it: "To stay wild, untamed . . . to shout, weep, pray." ○

Symbols from Chagall's deeply religious upbringing in Russia are found throughout his work, as in *The Fall of the Angel* (above), which he worked on from 1923 to 1947. His *Sketch for the Harlequin* (top), a paper-and-fabric collage, dates from 1968-70.

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IRAQ'S OPPRESSED MAJORITY

For nearly a century, the nation's 15 million Shiite Muslims have been denied access to political power. How their demands are met in the months to come could well determine Iraq's future

BY ANDREW COCKBURN

KARBALA, 60 miles southwest of Baghdad, is usually no more than a 90-minute drive through an increasingly green landscape of date palms, eucalyptus trees and reeds watered by the nearby Euphrates. But for most of a week this past October, the journey turned into a five-hour crawl. Highways leading to Karbala were choked by an enormous mass of humanity heading toward the city to celebrate the birth of the 12th Imam, a redeemer born more than a thousand years ago who disappeared as a child and, so these travelers believe, will one day return to overthrow all tyrants. Many walked all the way from Baghdad—crowds had been streaming out of the city since midweek—while others had set out days earlier from towns as far away as Nasiriyah, in the deep south, and Kirkuk, 200 miles north of Baghdad.

Despite dust and 90-degree heat, the pilgrims, many of them barefoot, kept up an urgent pace. The flags they carried—mostly bright green, but also red, yellow, pink—made brilliant splashes of color in the flat landscape, contrasting with the all-enveloping black *abayas* of the women. They marched in separate groups, parties of friends or neighbors, until they drew close to their destination and coalesced into one dense column. Every so often a group would break into a rhythmic chant, invoking the names of the martyr-saints that inspire their faith. "We are Shia," the men roared in unison, stabbing their fists in the air. "We are the sons of Imam

For the first time in decades, Iraq's 15 million Shiites are able to gather en masse (at the Imam Hussein shrine in Karbala in April). No democratic Iraq government can ignore their demands.

"Everything is changing," says one Shiite leader. "For too long the Shia have been a majority that acted like a minority. They have to raise their heads. They have a right to represent Iraq."

Hussein, and the name of Ali is always on our tongues."

Shiites or Shia—the terms are used interchangeably and both mean "partisans"—form one of the two great branches of Islam. About 150 million Shiites are spread around the world, most of them in Iran, Iraq, India and Pakistan. While the Sunni branch makes up the greater part of the global Muslim population of more than a billion, Shiites form the majority in Iraq—as many as 15 million out of a population of 24 million. Nonetheless, Shiites have never held power in Iraq nor fully participated in its government, and at times have been brutally repressed.

The future role of the Shiites is one of the most important issues facing Iraq. Now that their greatest oppressor, Saddam Hussein, is gone, they will no longer tolerate second-class status. At the same time, others in Iraq and elsewhere, including many in the United States, fear that a Shiite-dominated government might impose an Iranian-style fundamentalist Islamic regime. If a democratic Iraq is to emerge from the ruins bequeathed by Saddam Hussein, both the hopes of the Shiites and the fears of non-Shiites will somehow have to be accommodated.

Shiites believe that Muhammad's cousin Ali (in a 17th-century mural) was the prophet's only rightful successor.

Iraqi Shiites are a diverse group. Some are educated and middle class, but most are poor Arabs living in rural southern Iraq or Baghdad's slums (there are significant communities among the non-Arab Kurdish and Turkmen peoples of the north as well). They range from the deeply religious to the wholly secular. Their common bond is a memory of discrimination, whether in the form of the mass executions common during the reign of Saddam Hussein or simply in their exclusion from power throughout Iraq's history.

Today, the Shiites are confident that those days ended with the fall of Saddam Hussein. "Everything is changing," Adil Abdul Mehdi, a leader of a powerful Shiite party, told me cheerfully in Baghdad, as we sped across town in a convoy of SUVs, surrounded by armed bodyguards. "For too long the Shia have been a majority that acted like a minority. They have to raise their heads. They have a right to represent Iraq."

Now, on the road to Karbala, I was watching the Shiites assert one of those rights: the freedom to celebrate one of their great religious festivals. Fifteenth Shaban, as the festival is called, is the date in the Muslim calendar (October 11 this year) that marks the birthday of the 12th Imam. By the evening of the festival, well over a million people were crowded onto the vast plaza surrounding the two colossal shrines crowned with golden domes and minarets that dominate the center of the city.

Karbala is a holy place for Shiites because of the two men buried in those shrines. Half brothers, they died in a battle here long ago, a battle that grew out of a ferocious struggle to lead Islam after the death of the prophet Muhammad in A.D. 632. The Shiite faith originated with those Muslims who thought that the wrong side—that led by Abu Bakr, father-in-law of the prophet Muhammad—won, unjustly usurping Muhammad's cousin and son-in-law, Ali. (Sunnis believe that Abu Bakr was the rightful heir.) Ali did finally become caliph in 656 but was assassinated five years later and buried in nearby Najaf. Shiites regard Ali's brief reign as the last period of legitimate and just rule on earth.

Nineteen years after Ali's death, his second son, Hussein, who had been living without evident political ambition in Medina, responded to a call from the people of Kufa, then chafing under the harsh rule of a Sunni caliph, Yazid, and set out across the desert to lead them in rebellion. It is a fundamental tenet of Shiism that Hussein's motivation was not power lust but revulsion at Yazid's tyrannical rule. As one cleric in a theological school in Najaf assured me, "When Imam Hussein left Medina, he said, 'I'm not going to win a fortune or a throne. I am going out for justice,' even though he knew he was going to be sacrificed." Indeed, many believe that Hussein knew before he left Medina that his supporters had been rounded up and that his cause was doomed.

ANDREW COCKBURN is the author, with his brother Patrick, of Out of Ashes: the Resurrection of Saddam Hussein.

IMAM ZAID AL-CHAHLZAID MOSQUE, IN ALBU, IRAQ, 2003 — ALEXANDER LEMBERG FOR WIDE WORLD PHOTOS

Intercepted by the caliph's army on the plain of Karbala after a long journey across the desert, Hussein and his band of 72 family members and followers refused to surrender, digging a ditch behind them to preclude retreat. The saga cherished by Iraqi Shiites recounts how, in the midst of battle, Hussein's warrior half brother Abbas heard the women and children crying from thirst. Fighting his way to a nearby stream to fetch water, he was cut down. Hussein, fighting on a few hundred yards away, was the last to die, sword in one hand, Koran in the other.

This religious schism between Sunnis and Shiites is not, however, mutually antagonistic in the manner of Catholics and Protestants in Northern Ireland or Christians and Muslims in Beirut. "My mother is Sunni, my father Shia," says Baghdad native Fareer Yassin. "One third of the Muslims in my high-school graduating class were from mixed Sunni Shia marriages, and that was typical of Baghdad." I have heard similar stories from many Iraqis, who also point out that direct clashes between the two communities are extremely rare and that discrimination against the Shiites has inevitably been orchestrated by rulers—whether kings or Saddam Hussein—for political, not religious reasons.

FOR THE MASSES of faithful pouring into Karbala for the festival this past October, the ancient battle at this site might well have happened yesterday. Strolling late in the warm evening through the vast crowd around the shrines of Hussein and Abbas, I heard constant reaffirmations of support for the long dead heroes. "See the love that people have for Imam Hussein," said my guide, Ala'a Baqir, a pharmacist influential in local affairs. "He is for justice, and people think we are losing that in our own time. We are ready to fight at any time for Imam Hussein."

It would be easy to dismiss such assertions as simply the celebration of a folk myth, but the saga of the martyrs has preserved a potent philosophy at the core of the Shiite faith. "Shiites regard the opposing of injustice and tyranny and fighting against an unjust ruler as a supreme religious duty," explained Hussain Shahristani, a nuclear scientist, devout Shiite and lifelong rebel, as we sat in the Karbala office of the humanitarian relief group he founded and directs. He cited the great national uprising of 1920 (his father's first cousin was one of its leaders) against the British, who occupied Iraq between 1917 and 1932—and effectively controlled it until 1958. Although both Shiites and Sunnis joined the revolt, Shiite religious and tribal leaders played the major role. Politically, the failed rebellion proved disastrous for the Shiites, since the British thereafter relied exclusively on the Sunni elite to govern Iraq. But, says Shahristani, Shiites "couldn't do anything else. It might be politically better to just go along with the master, but for us that's impossible."

Shahristani speaks with authority on the topic of dissent. In September 1979 he told Saddam Hussein to his face that building a nuclear weapon was wrong and refused to work on the project. He was tortured and spent 11 years behind bars, 10 in solitary confinement. During the Gulf War in 1991, he made a daring escape—he stole a guard's uniform and drove out the prison's main gate. Afterward, he declined a comfortable exile in the West in favor of organizing humanitarian aid for both Iraqi refugees in Iran and anti-Saddam resistance in Iraq.

Pilgrims streamed into the holy city of Karbala in October to celebrate 15th Shaban, the birthday of the ninth-century Imam Mehdi. Shiites believe he will return to save the world.

I found Shahristani's views echoed by religious authorities, who made it clear that this obligation to resist applies even to the American-led occupation, of which the Shiites are increasingly resentful. In a modest house in the center of Karbala, Sheik Abdul Mehdi Salami, who leads the Friday prayers at the Hussein shrine (an immensely prestigious position), said that "fighting injustice is the principal duty for all Shia." "For the meantime," he added, his people were using "peaceful means" to assert their rights from the coalition and that Shiites do not like "killing and blood." But if they must, they will "sacrifice everything to get their rights."

Compared with what they endured in Saddam Hussein's time, the Shiites today appear to have little cause for complaint. Saddam not only had banned all public religious processions but, according to worshipers I spoke to, particular-

Shahristani told me the Baathists offered to release Sadr for a promise of silence. "No. I have closed all the doors," he said. "Now you have to kill me so the people can rise up."

ly disliked the notion of a 12th Imam who would return to overthrow tyrants. As a result, anyone who attended the birthday festival during Saddam's rule was risking his life. Strolling with me through the crowd on the eve of the festival, Ala'a Baqir recalled how celebrants would evade Saddam's security forces on the main roads by sneaking through fields and palm groves. "We would go out and leave food and put down little lights to guide them," said Baqir.

After the Gulf War of 1991, Saddam Hussein ordered mass executions (more than 3,000 remains were found last May in this communal grave) as retribution for Shiite uprisings.

This year, for the first time in decades, there was no need for surreptitious measures, and the plaza was alive with light and the noise of declaiming preachers and chanting marchers—"we are the Shia . . ."—against the background noise of several hundred thousand people. Above us, party balloons soared up past the golden dome of the Abbas shrine.

Yet even this happy atmosphere harbored ominous undercurrents. A coffin was carried around the Hussein shrine—a traditional Shiite rite—but this one contained the body of a man killed the night before in a firefight with American soldiers in Sadr City, the vast Shiite slum in northeast Baghdad. I began noticing how many young men in the crowd were wearing white burial shrouds over their shoulders, a symbol of their willingness to die as martyrs, an attitude much favored by supporters of Muqtada al-Sadr, the 30-year-old extremist whose men had ambushed and killed two American soldiers in that firefight.

FOR CENTURIES, Karbala and its sister shrine city, Najaf, had been islands of Shiism, well connected to the international Shiite community but with few ties to the nomadic Bedouin tribes roaming the desert just beyond the cities' gates. Only at the beginning of the 19th century did the clergy of Karbala and Najaf begin to convert the desert tribes, partly because they needed muscle to defend against increasing attacks by fanatical Wahhabi Sunni sweeping across the desert from what is now Saudi Arabia.

At the same time, Shiite clerical leaders decided that only the most learned among them should be allowed to issue *fatwas*, religious rulings on matters of law or common concern. These few senior figures became known as "sources of emulation." One hot day in late September I sat in on a class at Najaf's 900-year-old religious university conducted by one of four such living sources of emulation, the Pakistan-born Ayatollah Bashir al-Najri. My classmates were turbaned, gray-whiskered elders. We sat respectfully on the floor while our revered teacher expounded at some length on the requirements of women to perform ritual ablutions. Some parts of the syllabus, I felt, had probably not changed over the centuries.

The Shiite religious leadership gained power and influence in the last years of Ottoman rule, just before World War I, then fell on harder times during the British occupation and the succeeding Sunni monarchy installed in 1921. "The first Shia prime minister was appointed in 1947," Adil Mehdi said bitterly. "That was nearly 28 years after the founding of the state. Though the Shia represented 60 percent of the population, we only ever had 20 percent of the cabinet posts."

In hopes of bettering their lot in the 1950s and early '60s, many Shiites were drawn to radical organizations, principally the Communist Party but also the Arab nationalist Baath Party. Thus, when the monarchy was swept away by a leftist revolution in 1958, the Shiites were at last represented in the radical military government that assumed power. But that regime was overthrown in another coup five years later, and

the Shiites' brief moment in the sun came to an end.

Though the Baath Party had originally numbered many Shiites among its leaders, by the time it began its 35-year rule with a coup in 1968, the leadership was solidly in the hands of a tight group of Sunni tribesmen, including a ruthless hit man named Saddam Hussein, from the region around Tikrit. Apart from hunting down and killing their former Communist rivals, Saddam and his militantly secular colleagues also took aim at the Shiite religious leadership.

In response to the wholesale defection of many of their flock to the Communists, the Shiite religious leadership made efforts to modernize their message and attract new followers. Prominent among them was a brilliant scholar named Muhammad Baqir al-Sadr, the principal sponsor of Dawa, a radical Islamic political party that confronted the Baathists as an opposition group throughout the 1970s.

The confrontation intensified after Ayatollah Khomeini, himself a Shiite who had spent most of the 1960s and '70s in Najaf developing his theory that clergy had the exclusive right to govern, seized power in Iran in 1979. Sadr, thrilled by Iran's mass Islamic uprising against the shah, thought a similar religious takeover of the government was possible in Iraq. Saddam, apparently worried that Sadr might be right, launched a campaign to round up his supporters. In April 1980, Sadr and his sister were arrested and executed.

Shahristani, the nuclear scientist and prison escapee, was close to Sadr. He told me that at the end, the Baathists offered Sadr a deal. "They said they would release him in exchange for a promise of silence. Sadr said, 'No. I have closed all the doors, there is no escape for you. Now you have to kill me so the people can rise up.'" As any Shiite would immediately understand, it was an embrace of martyrdom that echoed the self-sacrifice of Hussein 1,300 years before.

Both Sadr's hopes and Saddam's fears proved groundless. The people did not rise up, and in the eight-year war that followed Saddam's invasion of Iran in September 1980, Shiite conscripts for the most part fought doggedly for Iraq, largely motivated, despite their grievances and persecution, by Iraqi patriotism.

But after the 1991 Gulf War, inspired by calls for an uprising from Washington, Shiites finally erupted in furious rebellion. That the expected U.S. assistance never came has hardly been forgotten.

In August, a car bomb in Najaf (above, left) killed 83, including Ayatollah Muhammad Baqir al-Hakim (his funeral casket above, right), who had cooperated with coalition forces. Hakim was likely killed by security services loyal to Saddam Hussein.

Nobody knows how many people were killed in Saddam's savage reprisals for the uprising, but the number is at least in the tens of thousands. One mass grave of those slaughtered has alone yielded more than 3,000 bodies, and hundreds of such graves have been unearthed. Ironically, the Baathist's savagery helped unify the diverse Shiite community. In the 1990s, even while cracking down viciously on Shiite religious leadership, Saddam made attempts to bolster his support among religious conservatives by encouraging such Islamic practices as the veiling of women, the segregation of the sexes in schools and the prohibition of alcohol. (Gestures to appease Shiites included repairs to shrines and a manufactured family tree tracing Saddam's ancestry back to Ali.) But while the measures helped revive traditions, they produced no corresponding support for the dictator.

In the week following the 15th Shaban celebrations, Muqtada's gunmen attempted to take over the Hussein shrine in a deadly shootout with supporters of a rival Shiite leader.

Toward the end of the decade, Shiites found a leader in the person of Muhammad Sadiq al-Sadr, a teacher from Najaf and a distant relative of the resistance leader executed in 1980. Initially encouraged by the regime because of his denunciations of the United States, Sadr II, as he is often called, set up a network of followers across southern Iraq and in Baghdad. Late in 1998, though, he began wearing the white martyr's shroud while denouncing Saddam's regime to growing and enthusiastic crowds. In February 1999, while driving home in Najaf, Sadr, along with two of his sons, was duly machine-gunned to death by state security agents.

In Karbala in October, Polish soldiers helped restore order after several Iraqis were killed or wounded in clashes between moderate Shiites and radicals led by Muqtada.

Today, portraits of Sadr II, who is invariably depicted as a humble ancient with a snow-white beard, adorn walls and billboards around Iraq. These frequently share space with bearded, turbaned portraits of other Shiite leaders, many of them dead—testimony to the high mortality rate in Shiite religious politics. A few hundred yards from the site of the al-Sadr murder, for example, is a green-domed tomb, still under construction, that contains what few remains could be collected of the late Ayatollah Muhammad Baqir al-Hakim, founder and leader of a political party called the Supreme Council for the Islamic Revolution in Iraq. He was the victim of a massive car bomb that exploded as he was leaving Najaf's Imam Ali shrine on August 29 this year.

Hakim was almost certainly killed by former members of Saddam's security services now active in the resistance and determined to eliminate anyone, like Hakim, who cooperated with the Americans. However, at the funeral ceremonies, attended by hundreds of thousands of Hakim's followers, Abdel-Aziz al-Hakim, his brother and successor as leader of the party, bitterly denounced the occupation forces for their failure to protect Hakim. It seemed that at least some Shiites were finding reasons to criticize their new rulers.

I viewed the massive destruction caused by the Hakim bomb during a trip to the shrine to see where a man I once knew had also been murdered. Last April, Abdul Majid al-Khoei, the son of a grand ayatollah, had just returned to Najaf—with the blessing of coalition forces, who appreciated his energy and liberal views—after 12 years of exile in London. Just inside the courtyard of the Ali shrine, a mob attacked him. Two companions were stabbed to death, but Khoei managed to escape and run the 50 or so yards that brought him to the front door of a house belonging to Muqtada al-Sadr, the radical Shiite extremist, who is a son of the martyred Sadr II. Khoei pleaded for shelter, but although there is little doubt that Muqtada was inside, the door did not open. A shopkeeper finally took Khoei in, but the mob followed, dragged him down the street and round the corner, and knifed him to death.

Muqtada has always denied having had any role in the killing, though no one in Najaf that I talked to doubts his responsibility. Khoei not only believed in cooperation with the occupation but also stood for the separation of church and state, as opposed to the Iranian system of clerical rule, which Muqtada has endorsed.

On the day I retraced Khoei's desperate flight, Muqtada's well-guarded door was open and his front room crowded with petitioners seeking his help or advice. Three clerics sat at a table collecting wads of bank notes contributed by the faithful. Six months after the invasion that toppled his father's killer, Muqtada was embroiled in an escalating conflict

with the coalition forces and seemed to welcome any opportunity to confront them or, for that matter, other Shiite groups. Muqtada certainly enjoys a large amount of support among the poorer Shiites, most particularly among young unemployed men in the great Shiite slum of Sadr City in Baghdad. In the week following the peaceful 15th Shaban celebrations in Karbala, Muqtada's gunmen attempted to take over the Hussein shrine in a shootout with supporters of a rival leader that left several dead and wounded on both sides. A few days later, they fought a U.S. patrol near the shrine, killing three Americans. (There were reports of a U.S. crackdown on Muqtada as we went to press.)

Opposing Muqtada in Karbala had been a shrine protection force loyal to perhaps the most important and revered Shiite leader in Iraq, Grand Ayatollah Ali Sistani. Sistani, 73, was born in Iran but moved to Najaf more than 50 years ago to study. He spent much of the 1990s under the baleful surveillance of Saddam's security forces. Yet from his house, he maintained an extraordinary moral authority over the Shiite masses. When, in mid-April, there was an erroneous radio report that Sistani's house was under siege by followers of Muqtada al-Sadr, the news spread like wildfire. "I was sleeping in a village near Basra that night," recalls Hussain Shahristani. "Suddenly I saw the villagers grabbing their guns and preparing to rush to Najaf, hundreds of miles away. 'Sistani is under attack,' they told me. That was all they needed to know. The same thing happened all over Iraq."

Though he has denounced violence and the proliferation of firearms in Iraq, Sistani himself has command of a far more potent weapon—the immense authority of his fatwas. Last July he addressed the fundamental question of how he wanted the constitution for Iraq to be written. The occupation authorities had endorsed a plan by which their handpicked governing council would appoint a committee that would in turn devise the new constitution. In a fatwa written in graceful classical Arabic, Sistani declared that this approach was "unacceptable" because there was no guarantee that a constitution produced in this way would "represent the (Iraqi) National identity of which Islam and the noble values of society are an integral part." (Sistani has always rejected Khomeini's thesis on direct clerical rule.) Instead, he insisted, anyone writing a constitution would have to be elected. A constitution devised by any other means, he made clear, would be "illegitimate."

Radical Shiite extremist Muqtada al-Sadr (above, left) enjoys growing support among younger, poorer Shiites. Iraq's most revered Shiite cleric, Grand Ayatollah Ali Sistani (above, right), would reject any constitution written by unelected appointees.

The story goes that when Paul Bremer, the head of the Coalition Provisional Authority, sent a message to the venerable religious leader suggesting that the two men cooperate on the constitution, Sistani sent a message back: "Mr. Bremer, you are an American and I am an Iranian. I suggest we leave it up to the Iraqis to devise their constitution."

Few in Iraq believe that a constitution denounced by Sistani would stand a chance. But any fair election would almost certainly deliver a Shiite-dominated constitutional assembly. The underdogs and rebels would at last be in power—a sea change for a group that has so long defined itself through resistance to oppression. Will the Shiites still celebrate martyrdom when they are, themselves, in power? And who will judge them if they prove unjust? ○

JAZZED ABOUT ROY HAYNES

"He commands the drums and the rhythm like a general looking over a field," jazz critic Giddins writes of Haynes (in Chicago last year). Yet Haynes' solos are playful and witty, Giddins adds, thanks to techniques "no one ever has been able to duplicate."

A robust 78, one of the greatest drummers of all time still riffs up a storm and wows fellow musicians

BY SAM STEPHENSON

YOU MAY NOT HAVE HEARD of Roy Haynes, but you have almost certainly heard him. In nearly 60 years as a jazz drummer, Haynes has appeared on some 600 recordings, many of them classics. With Charlie Parker and Dizzy Gillespie on 1951's stirring "Night in Tunisia," that's Haynes popping the drums, cymbals and metal rims. With Sarah Vaughan on "He's My Guy," Haynes' nimble swing complements her satiny voice. With Thelonious Monk on "'Round Midnight," with John Coltrane on "Dear Old Stockholm," with Lester Young, Bud Powell, Miles Davis, Stan Getz, Ray Charles and Chick Corea—on one historic recording after another, Haynes propels the music with an incomparable blend of spontaneous expression and sympathetic restraint. He is the "father of modern drumming," says the guitarist Pat Metheny. Haynes, says Corea, is a "national treasure."

But he's no relic. Now 78, Haynes has averaged more than 50 live performances a year over the past three years, playing in Paris, Rome, Tokyo, Istanbul, Madrid and many U.S. cities. He released a new compact disc this year, *Love Letters*, which *Village Voice* critic Gary Giddins described as "borderline miraculous," marked by "heedless joy" and "unbridled enthusiasm." Even Haynes is a bit surprised by all his energy. "When I was in my 20s," he tells me, "I couldn't even imagine that I'd be 78 years old and still playing, performing and innovating like this. I read something recently where somebody said I was pushing 80 years old. I stepped back and said, 80? It's hard for me to believe."

Though Haynes has played with legends, and their music was often revolutionary, he remains largely unknown outside the jazz community. That is partly because of America's curious taste for celebrities and fads, but also because of the way jazz history emphasizes stars and frontmen and overlooks sidemen, especially drummers and bassists. Then there's the appealing myth of the solitary artist, which Haynes does not fit. He may play in four-limbed flurries with more activity and intricacy than any drummer before him, but his real art is communication. "The thing that sets Roy apart from other musicians is that he listens so well," says the pianist McCoy Tyner, who played with Haynes in bands led by Coltrane in the early 1960s. "He teaches you to listen

carefully and to respond accordingly, to put things in perspective, not to simply go out for yourself. He can do this in a quiet fashion accompanying singers or with those loose, powerful polyrhythms of his that are so magnificent."

These days Haynes works primarily with two bands. One has stars in their 30s and 40s such as trumpeters Roy Hargrove and Nicholas Payton, bassist Christian McBride and saxophonist Kenny Garrett. The other has four up-and-comers in their 20s. One night at the Jazz Showcase in Chicago, after the young quartet played a blistering version of the Parker tune "Diverse," Haynes staggered up to the microphone in a faux daze. "Daaaaaamn!" he exclaimed to the cheering crowd. "These guys are hot, aren't they?" The musicians grinned. Haynes pointed to a wall-size poster of Parker (who died in 1955 at age 34) behind the stage and said, "You know, if Charlie Parker were to walk into this club right now and see me here playing with these guys who are 50 years younger than me, I think he'd smile. He'd dig it."

Haynes, who has a shaved head and is not tall, has the lean, muscular body of a flyweight boxer and looks decades younger than he is. When he walks, he springs forward on his toes, and standing or sitting, he sways, shifts and squirms, restless as a kid. His laugh is robust and warm, and his mind is quick and can be challenging.

One July day, my friend Ward Hendon and I drove Haynes in our rented Taurus from Albany, New York, to a jazz festival 30 miles away in Saratoga Springs, where he would perform. Hendon, a New York City attorney who doesn't usually hang out with musicians, attempted small talk while we were loading the car, asking Haynes if he'd remembered to bring his drumsticks. Haynes seemed flabbergasted: "What? Do I have my drumsticks? What do you mean? Would a painter forget his paintbrushes? I don't understand?" He muttered in mock disgust at his decision to ride with us, and for the next half-hour ribbed Hendon. "Jeez, man, come on, can't you come up with anything better than that? Did I remember my drumsticks?" Finally, Hendon blurted out, "Look, man, rookie mistake!" Haynes roared with laughter, satisfied that he'd at last provoked an honest expression.

That night, after Haynes walked off the stage to a standing ovation, he approached Hendon. "Nooooow you know where my drumsticks are," he said with a wide grin.

Haynes' directness is of a piece with his art. "Roy stays on the edge and that keeps him young," says bassist Ed Howard, 43, who played with Haynes for 15 years until 1997. "He never lets up. He's always pushing boundaries, challenging you, living in the moment. He changes you musically and personally. He strips away your self-consciousness and makes you comfortable with possible embarrassment. He prepares you for anything that might happen. Some nights onstage he'll just take the microphone and give it to you and tell you to talk to the audience. You have to always be on alert."

Haynes (with saxophonist Joshua Redman and bassist Scott Colley in New York City this past March) "is a huge influence," says famed pianist McCoy Tyner. "Without Roy, the links of jazz wouldn't be as strong as they are today."

Haynes is one of the few musicians still performing whose origins touch the very roots of jazz. Growing up in the Boston area, he played in bands as a teenager before landing his first major gig in 1945 at age 20, in New York City, with Luis Russell's big band. Russell had worked with the jazz pioneers King Oliver in the 1920s and Louis Armstrong in the 1930s. "Luis seemed impressed, and he believed in me," says Haynes. "I'll never forget one thing he told me. He said, 'Anytime you get lost, just roll.' That's when I learned there isn't

SAM STEPHENSON, a research associate at the Center for Documentary Studies at Duke University, is the author of the 2001 book Dream Street: W. Eugene Smith's Pittsburgh Project.

a definite time with the music, just space. You didn't have to play only time signatures, you didn't have to hit the high-hat [cymbals] on two's and four's every time. You could be looser with the rhythms. But I also learned you had to have control and swing. Luis had a 17-, 18-piece band, and I had to have control to keep the band together."

Roy Owen Haynes was born in the Roxbury section of Boston in 1925, the third of Gustavus and Edna Haynes' four children, all sons. His parents had moved to the area from Barbados in the West Indies. His father worked for Standard Oil Company and liked to tinker with cars. His mother was a deeply religious churchgoer who did not allow secular music in the house on Sundays. Haynes' oldest brother, Douglas, served in the U.S. Army in World War II and died less than a decade after coming home. Another older brother, Vincent, who was a photographer, football coach and civic leader in Roxbury, died this past June at age 82. Haynes' surviving brother, Michael, 76, has been senior minister at Roxbury's landmark Twelfth Baptist Church since 1964 and served three terms in the Massachusetts state legislature.

"Roy is like an eight ball right in the side pocket," Thelonious Monk (at the piano, with saxophonist Charlie "Bird" Parker, bassist Charles Mingus and Haynes, then 28, in New York City in 1953) once said of Haynes.

Haynes was introduced to music early. "My father sang in a choir and played organ," he says. "We had an organ in our house when I was growing up. As a kid I was banging on everything around the house until I got a set of drums. I also studied violin, but I was a natural drummer, as they said in those days. My older brother Douglas was not a professional musician, but he was a student of music and he knew a lot of musicians. In the late 1930s he was a roadie for Blanche Calloway, who was Cab Calloway's sister." Douglas introduced Haynes to one of his heroes, Count Basie's drummer Jo Jones, when he was still a teenager. "Jo's drums on the Basie record *The World is Mad* turned me on. When I heard it, I really knew *that's* what I wanted to do."

In 1947, at 22, Haynes left Russell's band and moved on to legendary saxophonist Lester Young; after two years, he briefly played with Bud Powell and also Miles Davis before joining up with Charlie "Bird" Parker, with whom he played for three years. "Roy was different," saxophonist Sonny Rollins, 73, recalls of the early years. "He was able to accompany Parker in the most wonderful way. He had his own sound and his own methods. I remember one night in particular when they were opening at some place in Greenwich Village opposite Art Tatum. It was the great Charlie Parker and the great Art Tatum on one bill." Haynes remembers the night. "That was at the Café Society in 1950," he says, adding: "Billie Holiday sat in with us. Ray Bolger was there and sat in with us too. He was the Broadway dancer who played the Scarecrow in the movie *The Wizard of Oz*. He performed a few soft-shoe numbers while we played. Can you imagine?"

Those were jazz's golden years, before rock 'n' roll and rhythm and blues splintered the audience, a period of constant innovation that gave rise to, among other things, bebop. Haynes was in the forefront. Traditionally, jazz drummers had been relegated to rote timekeeping—*ding-chicka-ding-chicka-ding*. But Haynes, along with other drum pioneers such as Jo Jones, Sid Catlett, Kenny Clarke and Max Roach, helped free the drums. Haynes extracted the rhythmic qualities from melodies and created new drum and cymbal patterns—*ding-chicka-pop-snap-chicka-tick-boom-ding*. Rather than using the cymbals as mere decorative accents, Haynes made them central to his rhythmic approach. His unique sound earned him the nickname Snap Crackle.

Haynes' work in the late 1940s and early '50s—heard on tunes such as Lester Young's "Ding Dong," Parker's "Anthropology," Powell's "Bouncing with Bud" and Davis' "Morpheus"—inspired a generation or two of artists. "Roy may have been the first avant-garde jazz musician, in terms of his freedom with the rhythms," says the drummer Billy Hart, 63. "He was so far in the future, way ahead of his time, but he was natural and traditionally grounded too."

A measure of Haynes' free-spiritedness is that in 1952 he *turned down* the drum chair in Duke Ellington's band, perhaps the most influential jazz orchestra in history. "I was with Bird and we'd just finished playing a concert at Carnegie Hall, which was a double bill with Duke. I was living in the President Hotel on 48th Street, and Duke called me there. We just talked about a lot of things, my music, his music. But this new music was happening at the time, and I knew that if

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I went with Duke's band, there would have been some problems with some of the older members who weren't so hip to the new thing. Duke himself could deal with it, I'm sure, or else he wouldn't have wanted me.

"From then on," Haynes continues, "I would run into Duke at different parties and restaurants, and he would always remind me that I didn't join his band. He would make a joke of it. I thought it was so beautiful that he would do that. I remember one time I saw him in Washington, D.C. back during the Johnson administration. One of Johnson's secretaries was into jazz, and she would have these parties at her house. One night I was arriving at a party as Duke was leaving, and he mentioned it then too—that I didn't join his band. It must have been nearly 20 years later. So, that respect and that love, I felt like I was a part of Duke Ellington's thing, even though, you know, I wasn't."

Haynes joined Sarah Vaughan's band in 1953 and stayed with her for five years. An expressive musician can sometimes be stymied accompanying a singer, but Haynes fine-tuned his improvisations. "Sarah sang the slowest ballads of any singer, so I had to be patient," says Haynes. "But I also love lyrics and I love beautiful melodies, so I enjoyed listening to her while I was playing." Haynes' work on Vaughan's classic 1954 albums *Sarah Vaughan with Clifford Brown* and *Swingin' Easy* are masterpieces of complementary drumming. "The first thing Roy gives you is a sense of taste," Tyner says. "Even when he's giving you those loose, free rhythms that are so extraordinary, he's still listening to you and being tasteful and lyrical. It's awfully hard to describe how he achieves that balance, but I wouldn't be surprised if he learned how to do it while he was accompanying Sarah."

Haynes graces legendary recordings by Coltrane (top), Monk, Parker and Vaughan.

DURING HIS YEARS with Vaughan, Haynes bought a duplex in Hollis, Long Island, where he and his wife, Jesse Lee Nevels Haynes, raised two sons and a daughter. All three, now grown, still live in that same duplex with their respective families. (Haynes moved to another home on Long Island after his wife died in 1979. He has not remarried.) The middle-class nature of Haynes' family, like that of his parents, disavows the stereotype of the tumultuous, dissipated, often tragic lifestyle that is so much a part of jazz mythology.

But Haynes has been one of the hippest cats in the suburbs. From his father he inherited a taste for fine cars and custom-made clothes. Today, he owns a 1974 Brickland, a 1990 custom El Dorado, a 1998 El Dorado and a 2001 CL500 Mercedes Benz. "My first car was a convertible Oldsmobile Ninety-Eight that I bought in the early 1950s at the same time Miles Davis bought his first car, which was a Dodge convertible," he says. "Miles and I used to race our cars through Central Park at night with our tops down. I remember Miles used to tell girls"—he mimics Davis' famous hoarse whisper—"'Me and Roy Haynes, we like to race around Central Park smashing up our cars.' It was a wild, hip time." In 1960, *Esquire* ranked Haynes as one of the best-dressed men in America, along with Fred Astaire, Clark Gable and Cary Grant.

Haynes left Vaughan's band in 1958, and his work over the next decade was documented on dozens of influential recordings. By now, he had mostly dispensed with bar lines—the musical measurements that dictate a song's structure—and interacted with his band mates even more freely. Previously, drummers generally waited until the end of 16 bars to play a "fill," a pattern of drum figures. But Haynes would put a fill anywhere. "Before Roy, you could always distinctly hear the break when a drummer switched from keeping time to improvising a dialogue with the other musicians," says drummer Victor Lewis, 53. "Roy blurred the border. It was revolutionary. To be able to play as freely as Roy without disrupting the flow—while actually swinging like hell—is walking a fine line. He found a way to do it better than anybody else."

Another uncanny Haynes feat is to project his sound without being loud. His percussion seems to well up from all corners of a room. That may be difficult or impossible to hear on recordings, but seldom fails to impress musicians who share the bandstand with him or hear him live. "What Roy has as a musician is a very, very special thing," says drummer Jack DeJohnette, 61. "The way he tunes his drums, the projection he gets out of his drums, the way he interacts with musicians onstage: it's a rare combination of street education, high sophistication and *soul*."

As it is with many innovators, the initial reception to Haynes was mixed. In the spring of 1958, while he was playing with Thelonious Monk at the Five Spot Cafe in Manhattan, saxophonist Johnny Griffin took Coltrane's place in the band. Griffin, who would move to Europe in 1963, remembers his first time playing with Haynes. "The band was cookin', but Roy was busier than most drummers back then, and I wasn't used to it," Griffin, 75, says on the phone from his home in France. "Coming off the stage one night, I said to Thelonious, 'Man, your drummer here, doing that ding-a-ling-a-ding-a-ling-a, don't you think your drummer is a little bit too busy back there?' Thelonious just looked at me. Then he finally said, 'Hmmmmm, if you don't like it, you talk to him yourself.'"

"I went out back and found Roy," Griffin goes on. "I said, 'Roy, man, you know, this ding-a-ling-a-ding-a-ling-a. Don't you think you might be just a bit too busy, man?' Well, Roy just blew up on me. He went off. He said, 'Why, I played

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with Charlie Parker, I played with Lester Young, I played with Bud Powell, I played with Sarah Vaughan, I played with all these cats and nobody ever complained about my playing.' I said, 'I'm sorry, Roy. Please forget I said anything.'" A few nights later, Monk, Griffin, bassist Ahmed Abdul-Malik and Haynes were in the kitchen in between sets, and Monk, an oracular figure known in the jazz world as a man of few words, revisited the subject. "Thelonious started rubbing his chin whiskers like he was going to say something," Griffin recalls. "He sat back and kept rubbing his whiskers. Then, he said, 'Hmmmm, Johnny Griffin ain't scared of Roy Haynes.' That's all he said. We all looked around at each other. Then, we all broke out hysterically laughing. It was the funniest thing.

"Once I got used to what Roy was doing, I realized how wonderful it was," Griffin says. "He was completely different from anybody else. The slightest idea of anything on the bandstand would set him off on a different rhythmic and percussive course, but he always swung so damn hard. It was quite beautiful, and Thelonious loved it. He would say, 'Roy is like an eight ball right in the side pocket.'"

"Haynes defines the Monk experience," says Hart, recalling the live recordings that Haynes made in Monk's band (with Griffin) in 1958, released as Monk's albums *Misterioso* and *Thelonious in Action*. "He shared Monk's vision for both tradition and originality. Roy's improvisations on those records are true genius, so lyrical, so melodic, but also so advanced. It's like he could see into the future. If you take the music he made with Monk and add the music he made with Coltrane and Chick Corea in the 1960s, you've got the whole range of American music history wrapped up in one man, Roy Haynes. That much genius . . . it's hard to imagine. I normally don't talk like this, but I mean every word of it."

Haynes (stepping out at a birthday gig in New York City last March) made *Esquire*'s best-dressed list—in 1960.

HAYNES' INFLUENCE has reverberated through several generations of drummers. The novelties that confounded Johnny Griffin nearly five decades ago have been rubbed smooth by familiarity. The marvel is that the septuagenarian Haynes still wows cutting-edge musicians. In 1997, he cut short a vacation in Barbados to fill in for Tony Williams nine days after Williams died at age 51. The gig, slated for the Catalina Bar & Grill in Los Angeles, was going to be canceled. But when Haynes agreed to fill in, the trio's other members, pianist Mulgrew Miller and bassist Ira Coleman, decided to play.

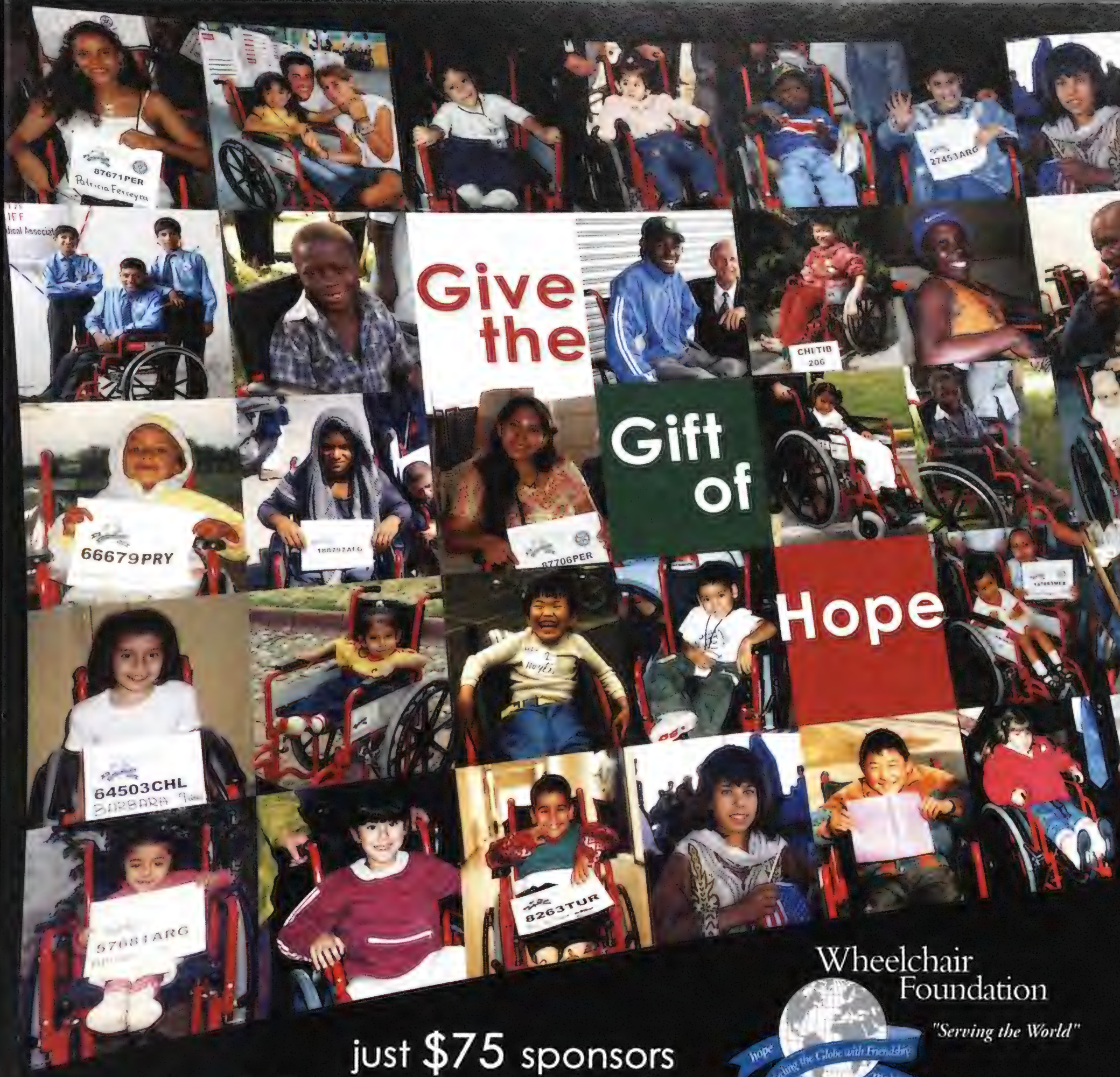
Jim Keltner, an L.A. session drummer for 35 years, attended the performance with Charlie Watts, drummer for the Rolling Stones. "Charlie and I could not believe our eyes and ears," says Keltner, 61. "It was magical. I was focused on Roy, and I noticed that he wasn't playing the high-hat at all, . . . just playing ride [cymbal] and snare [drum]. It was so free, so mesmerizing, just watching him be so loose and relaxed. I'd never heard a trio play like that in my life. You wish that people who don't know anything about jazz had been there. It was very powerful."

"It was one of the greatest musical experiences of my life," says Miller, 48. "I had never played with Roy before, and I was a little apprehensive, but after the first eight bars of the first tune I just smiled and said to myself, 'This is going to be all right.'" Coleman, 47, adds: "It felt like we were dancing up there. I'll never forget how visually present Roy was. He kept constant eye contact with us, as opposed to a lot of other players who close their eyes or sink into themselves. He was looking at us and smiling at us the whole time. It meant, 'I am listening to you, I hear you.'"

ROY HAYNES is receiving some of the acclaim due him from a wider audience. In 2002, he was honored with two nights of tribute concerts at Lincoln Center in New York City. This past March, Haynes' 78th birthday bash was held at the Blue Note, the famed Manhattan jazz club. Flowers and gifts filled his dressing room. Many notables showed up—pianist Cecil Taylor, drummer Andrew Cyrille, saxophonist Joe Lovano. Also present were Haynes' grown children: Graham, a cornetist, Craig, a drummer, and Leslie Haynes Gilmore, a legal secretary. Her son, Marcus Gilmore, then 16, played a drum solo as his grandfather stood offstage smiling proudly. "That was my best birthday present," Haynes says.

Musically and physically, Haynes seems to resist the passage of time. Backstage at the jazz festival in Saratoga Springs, singer Cassandra Wilson quizzed him about his diet and exercise habits, wanting to know how he stayed so fit and vibrant. Haynes, sporting a visor and dark sunglasses, only mentioned a ten-speed bicycle that he rides "once in a while."

When I ask Haynes about his music, he is hardly more forthcoming. "My music grows, but it doesn't change," he says. "I try to find ways to sort of fit the atmosphere whenever I am playing. To me, music is music. I go by the feeling of what I enjoy and what I like to do. I try to stay fresh. When leaves come out on the trees each season, they are new leaves. They are the same leaves, but they are really not." Haynes pauses. "That's all I'll say. I'm not the kind of person who likes to analyze, analyze, analyze. I mean, you are sitting here with a guy who has been playing this music for 60 years. Man, that's something, you know?" ○



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Who Was Deep Throat?

An investigative reporter enlists his journalism students to help him solve Watergate's most intriguing puzzle ~ BY WILLIAM GAINES

AFTER 36 YEARS as a full-time reporter at the *Chicago Tribune*, I retired in 1999 to teach journalism at the University of Illinois at Urbana-Champaign. During that first semester, as the students searched for an investigative project to tackle, I showed them *All the President's Men*. This 1976 movie is based on the book by *Washington Post* reporters Bob Woodward and Carl Bernstein, who won a Pulitzer Prize for the *Post* in 1973 for their stories about the political scandal known as Watergate. The film, starring Robert Redford as Woodward and Dustin Hoffman as Bernstein, accurately portrays how investigative reporters comport themselves, ask questions, conduct interviews, even the unobtrusive way they hold a notebook. What most intrigued the students, however, were the secret meetings between the Woodward character and a high-level government official, played by Hal Holbrook, that the book referred to only as Deep Throat. The name echoes a 1972 pornographic movie and plays off the term "deep background," or information provided to a reporter on the condition that the source be neither identified nor quoted directly.

With tips from a secret source they called Deep Throat, *Washington Post* reporters Bob Woodward (left) and Carl Bernstein helped break the Watergate scandal.

Deep Throat met with Woodward seven times between September 1972 and May 1973 to help the two reporters break several stories about the involvement of Nixon administration officials in the June 17, 1972, burglary of the Democratic National Committee headquarters at the Watergate office-apartment-hotel complex in Northwest Washington. (The burglars, who were seeking information that could be used against Democrats in the upcoming elections, were indicted later for conspiracy, burglary, wiretapping and planting secret listening devices.)

The *Post*'s stories, along with those of other newspapers and several rulings by Judge John Sirica, the chief judge for the U.S. District Court for the District of Columbia and the Watergate trials, led to televised hearings in the U.S. Senate about the break-in. From these, a riveted nation learned about an administration coverup of the break-in and a covert White House operation that engaged in burglary and political spying. The hearings were followed by impeachment proceedings by the Judiciary Committee of the House of Representatives. But before the full House could vote on whether the president should be impeached, Nixon resigned on August 9, 1974, and Vice President Gerald Ford was sworn in as president. At least 19 high-level officials and other conspirators would plead guilty to or be convicted of various crimes related to Watergate.

Besides adding the suffix "-gate" to our lexicon as an indicator of scandal, and evoking campaign finance reform bills, Watergate resulted in a lasting public distrust of government. It also left one of the century's most intriguing political mysteries unsolved.

For the past 30 years, guessing the identity of Deep Throat has become something of a parlor game among journalists, pundits and conspiracy theorists. At least three books and scores of articles have delved into the identity of Deep Throat. The list of likely suspects has included former White House aide and current network anchor Diane Sawyer; Nixon's

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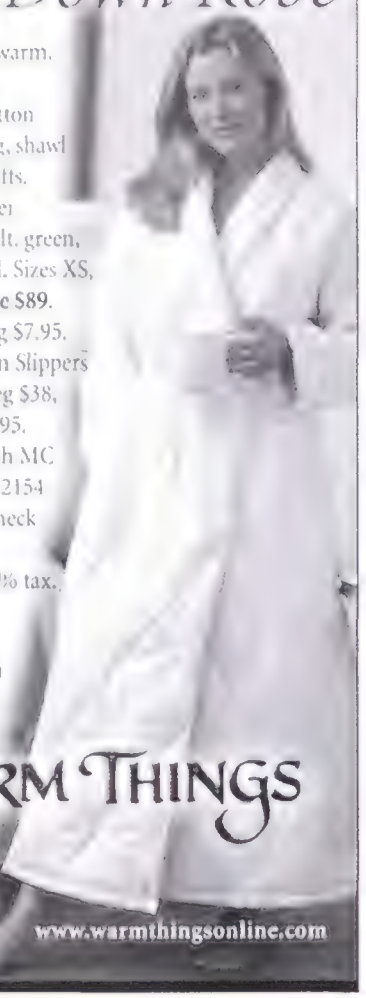

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Why, my students asked, was Deep Throat's identity still not known?

chief of staff, Alexander Haig; acting FBI director Patrick Gray; and John Sears, one of Nixon's deputy counsels. At the same time, some have argued that Deep Throat wasn't one person but a composite of several sources, while others have posited that he was merely a literary invention.

Woodward and Bernstein have both said they will not reveal their secret source's name until the individual dies, although Woodward did disclose that Deep Throat was a living male. Likewise, Ben Bradlee, executive editor of the *Washington Post* during the Watergate era, has said he knows Deep Throat's identity but won't divulge it. About 75 archival boxes, containing more than 250 notebooks, assorted files, galleys for the book *All the President's Men*, and photographs, which the University of Texas bought for $5 million this past April, will be available to the public in the fall of 2004. But documents referring to Deep Throat and other confidential sources will be kept sealed in an undisclosed location until the sources' deaths.

Why, my students asked, was Deep Throat's identity still not known after so many years? It was not an easy question to answer. Walt Harrington, a fellow journalism professor at the University of Illinois, once told me he had heard Bradlee say that anyone wanting to learn Deep Throat's identity should search a computer database for Watergate figures who were actually in Washington at the time of those meetings. To my knowledge, no one had ever done so. Though few organizations would have the resources or motivation to unmask Deep Throat, it seemed a challenging pursuit for my students.

The students read autobiographies of potential suspects and filled a computer spreadsheet with dates, meetings, events and other information. During eight semesters, about 60 undergraduate and graduate students pored over more than 16,000 pages of FBI reports on microfilm in our university library, as well as all the newspaper stories Woodward and Bernstein had written in the first two years of the scandal. From those documents, they concluded that only a member of the FBI or the White House would have had access to the information Deep Throat evidently leaked to Woodward. Later, we concluded that Deep Throat could not be in the FBI after we found a quote in a 1973 Woodward and Bernstein *Post* story attributed to a "White House" source that was similar in wording to one attributed to Deep Throat in *All the President's Men*. In an unpublished early draft of that book, we also read that neither reporter had FBI sources. The admission was later excised, in our view, to protect Deep Throat's identity.

We obtained the 1972 and '73 White House staff directories, which listed 72 people in high-level jobs; of those, 39 were living males. The students then ruled out anyone not working at the White House between September 1972 and May 1973, the period when Deep Throat met with Woodward. Newspaper reports showed that some promising Deep Throat candidates, including Chief of Staff Alexander Haig, were out of the country during the time of those meetings. Because the reporters had written that Deep Throat drank Scotch whisky and smoked, the students also eliminated confirmed teetotalers and nonsmokers.

That left just seven candidates: Patrick Buchanan, speechwriter and special assistant to Nixon and later a newspaper columnist and presidential candidate; Stephen Bull, a personal aide to Nixon; David Gergen and Raymond Price, both speechwriters; Jonathan Rose, attorney for regulatory affairs; Gerald Warren, deputy press secretary; and Fred Fielding, an attorney and assistant to White House chief legal counsel John Dean.

In June 2002, "Dateline NBC" interviewed the students about our project.

The students said the leading candidate was Buchanan. But a month later, one of them, Jessica Heckinger, got a note from him: "Please thank the class for me—for the unanimous vote. It is one of the few primaries I have won, outside of the Reform Party where I won them all. However, you made some mistakes. Buchanan gave up smoking on the China trip (February '72) and Buchanan has no motive." It was not a flat-out denial, but most of the students and I found Buchanan's remarks persuasive. We struck him from the list.

A few weeks later, we got a break. We were trying to determine who on our shortlist would have had knowledge of the secret slush fund controlled by members of Nixon's reelection campaign committee. This money bankrolled the Watergate burglars.

Judith Hoback, a bookkeeper for Nixon's reelection campaign committee, was the general accountant for the fund. In *All the President's Men*, Hoback says that soon after the break-in, she deduced that the money she was disbursing might have something to do with the burglary, so she approached the FBI. She told them that cash disbursements of more than $50,000 apiece were given to committee officials Herbert Porter and Jeb Magruder.

William Gaines (above) and his students keep their Watergate research updated at deepthroatuncovered.com.

In their book, Woodward and Bernstein recalled that Hoback had revealed her suspicions about a slush fund to Woodward in an interview. Before the pair published a story about the secret fund in the *Post*, they confirmed the information, including the amounts, with Deep Throat.

The breadth of Deep Throat's information surprised my students. How could he have knowledge of the reelection committee's secret finances?

The students learned that the FBI had shared some of its findings with the White House counsel, John Dean. We did not consider Dean himself to be a candidate because he had left the White House in April 1973. This led us to Dean's assistant, Fred Fielding, who was already on our shortlist.

In the fall of 2002, student Thomas Rybarczyk dug up a June 1973 letter from Fielding that noted that Dean had given him a summary of a July 1972 FBI report detailing Hoback's account of

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the cash transactions. However, Hoback's recollections of the disbursements were mistaken; she had initially provided the FBI as well as Woodward and Bernstein with incorrect figures. In fact, Magruder had received $20,000, not the $50,000 she remembered. Curiously, though, Deep Throat had confirmed the *incorrect* figures, which suggests that he gleaned the information from the FBI report given to Dean.

Other clues started pointing us toward Fielding. For instance, Woodward and Bernstein omitted Fielding's name from stories about the White House counsel's office. Leaving a key source's name out of a story is a journalistic commonplace; it not only protects sources but prevents rival reporters from learning the identity of a valuable informant.

As far as we could determine, Fielding shared Deep Throat's taste for cigarettes and whisky. He had access to information that Deep Throat corroborated for Woodward and Bernstein. And as student Robert Breslin found in 2002, Fielding even fit a characterization of the mysterious source that Woodward and Bernstein deleted from that early, unpublished draft of their book. The reporters wrote that Deep Throat was "perhaps the only person in government in a position to possibly understand the whole scheme and not be a potential conspirator himself."

Fielding, who helped Dean run the White House's law office during the growing Watergate crisis, left the White House before Nixon resigned and returned to private law practice. In 1981, he became chief counsel to President Reagan and served in the White House for another five years before again returning to private practice. Fielding became a member of the Bush-Cheney transition team in 2000. In 2002, he became a member of the National Commission on Terrorist Attacks Upon the United States. Today, at age 64, he is a senior partner in the law firm Wiley Rein & Fielding LLP in Washington, D.C.

In 1978, Bob Haldeman, Nixon's first chief of staff, wrote in his book *The Ends of Power* about his belief that Field-

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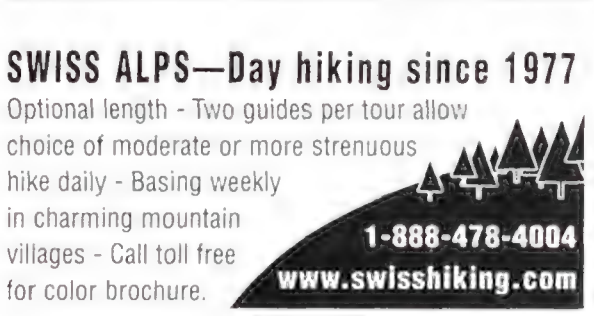
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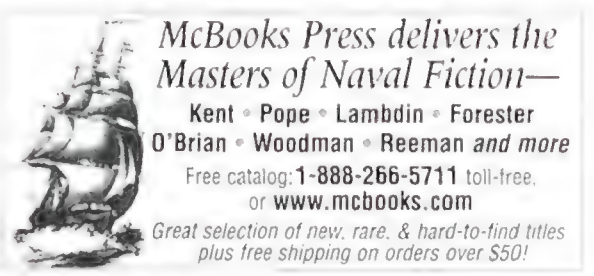
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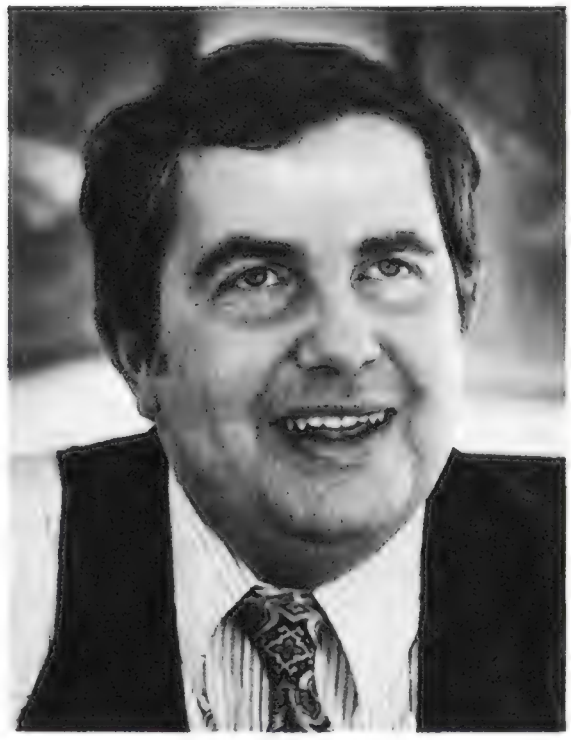

The class fingered Nixon's deputy counsel Fred Fielding (above, in 1978).

ing was Deep Throat and that "only Dean, or his associate, had access from the White House to the CRP [Committee to Re-elect the President], the FBI and the Justice Department during Watergate." Fielding denied the charge at the time. But Woodward has said, as recently as October of this year at a lecture, that "Deep Throat is a source who lied to his family, to his friends and colleagues denying that he had helped us." (Fielding did not respond to SMITHSONIAN magazine's request for comment.)

When my students contacted Woodward during the first semester of the investigation and asked him if he would talk to us about our investigations of Deep Throat, he declined. When we approached Carl Bernstein to ask him about our final seven suspects, he denounced our project, saying it undermined journalistic principles to reveal the identity of a confidential source.

On April 22 of this year, at a press conference in the Watergate Hotel, I announced that my students and I had deduced that Fred Fielding was indeed Deep Throat. The next day, I got an e-mail from John Dean: "I'll bet you a hundred dollars that you're wrong about Fielding."

I took the bet. ○

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Man of the Hour

Master horologist John Metcalfe keeps on ticking ~ BY PATRICK COOKE

"When people hand me their clocks, many plead, 'Please look after my baby,'" says Metcalfe (in his Manhattan workshop with a pendulum for a long-case clock).

Collectors bring John Metcalfe their rarest treasures. He disassembles each one at an elf's workbench while scores of clocks around the room chime the passing hours and the mighty computers of the world's financial giants whir in the tall buildings outside.

ON SEPTEMBER 11, 2001, an Associated Press photographer captured stunned Wall Street workers witnessing the collapse of the south tower of the World Trade Center. It is a moment in time, 9:59 a.m., and one of utter panic; most of those in the photograph are running for their lives. One man, however, doesn't move. He is John Metcalfe, who owns a tiny clock-repair shop around the corner from the trade center, on Beekman Street. He continues to look up at history unraveling before his eyes.

Sitting in a café a block from the sorrowful pit that is the twin towers site today, Metcalfe recalled that terrible moment. "One minute we could see the fires glowing deep within the building and great sheets of its skin peeling away and drifting down to earth like autumn leaves," he said. "Then the tower seemed to fall everywhere and nowhere at once and disappear into dust."

That a horologist, a master of antique clock restoration, would be idling in New York City's financial district that morning amid thousands of notoriously time-urgent money-changers might strike some as odd, unless they take the long view. "There was a period a couple of hundred years ago when clock-repair shops were everywhere in Lower Manhattan," Metcalfe said. "They serviced the chronometers aboard sailing ships docked in New York. I'm simply here where it all started."

Metcalfe has been one of New York's premier clock mechanics for the past 11 of his 48 years. His fascination with timepieces—technically, a timepiece tells time, a clock strikes a bell or a chime—began when, as a 10-year-old boy, he unearthed a busted alarm clock

in his grandmother's garden shed in North London. He took it apart and inside found his life's calling. He received a technical degree in clock repair, did a stint at the British Museum's Ilbert Collection in the Department of Medieval and Later Antiquities and taught clock repair at night. "Each student brought a clock to class," he said. "I dismantled it down to its smallest component, and the student would spend the semester putting it back together."

Eleven years ago he decided to hang a shingle in Manhattan, a city long on exquisite timepieces and short on people who know the oddball mechanics of how they work. Today, collectors and institutions such as New York's Metropolitan Museum of Art bring Metcalfe their rarest treasures. He disassembles each one at an elf's workbench using age-old hand tools—a bow-driven drill; delicate tweezers—while scores of clocks around the room chime the passing hours and the mighty computers of the world's financial giants whir in the tall buildings outside.

Standing at one of the bookshelves in his cluttered sixth-floor workshop, called Antiquarian Horologist, Metcalfe smiled and lightly tapped the side of a small ornate table clock. "This one is making a fuss just now," he said. "French, 1820s. Quite a gothic confection." He is youthful and small boned, and with his necktie done up properly even on the hottest days, he has the look of a Victorian poet.

He moved around the high-ceilinged room, its floor creaking, and stopped at a clock hanging on the wall. It was round with a long-stemmed case housing a pendulum. "This is a banjo clock. American. Mass-produced, 1890s. Cheap and cheerful. Stops mysteriously at 20 past." Across the way was a German clock missing its bell and hands. "This one dates to 1550," he said. "It's a wonder it's survived." Just then, bells and chimes all around the workshop lightly marked the quarter-hour. *Ting ting ting. Clang clang. Ding ding ding.*

"You know, there's really very little new in clocks," Metcalfe went on. *Ping ping ping.* "For example, you know that clock they sell at Kmart that displays the time on the ceiling of your bedroom? That's an Italian Renaissance idea! It had an oil lamp inside that projected the time through cutouts. Amazing."

As social critic Lewis Mumford noted in a 1934 essay, "The Monastery and the Clock," humankind hummed along for eons allowing the seasons to mark time. He speculated that it wasn't until the seventh century, when Pope Sabinianus decreed that monks observe seven periods of daily prayers, that the imperative arose to keep track of the hours. By the 13th century, the tyrannical mechanical clock was synchronizing humanity's deeds. Centuries later, the day was further broken down into minutes, minutes into seconds. "Time-keeping passed into time-serv-

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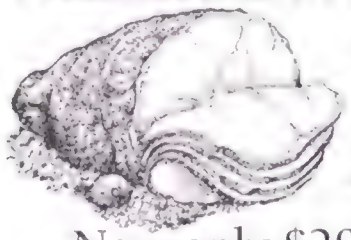

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A clock became "a memento mori," he said, "and a way of showing off that you weren't on an agrarian calendar like some peasant."

Metcalfe's tools, from standard to esoteric, are "extensions of my fingers," he says.

ing and time-accounting and time-rationing," Mumford wrote. "Eternity ceased gradually to serve as the measure and focus of human actions."

Time, German philosopher Immanuel Kant observed, is a "subjective condition." One can't see it or touch it, yet it exists. What was needed was a device to accurately measure it.

"That's where the portable coil spring came in, the real breakthrough," Metcalfe said, pawing through a box of old winding keys. "The spring provided the energy. The trick was to wind up the spring and then allow the energy to escape little by little in tiny increments over the course of a day or a week, by means of a device called an 'escapement,' a mechanism that interrupts the turning of the clock's wheels at regular intervals. That's the ticktock ticktock sound. The Germans, the French, the

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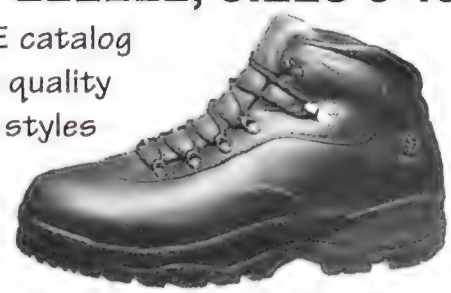

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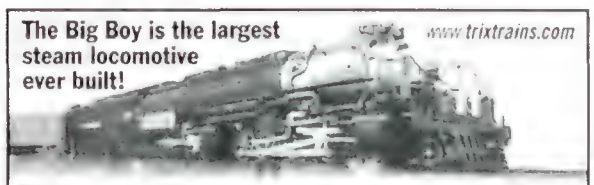

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Italians, the Dutch, the Americans, the British each developed their own idiosyncratic way—sometimes breathtakingly simple, sometimes needlessly complex—of doing the same thing. But the source behind the spring is always the same. It's you! You had to remember to wind the clock."

Some came to view clocks as art, others as science, but everybody claimed them as status symbols. "By the Renaissance you begin to see portraits where a clock appears behind the subject," Metcalfe said. "It was a memento mori and a way of showing off that time meant something to you and that—God forbid—you weren't on an agrarian calendar like some peasant."

And entire towns wanted the glory. "Every village longed for a clock in the town square," said Metcalfe, opening his arms to the tall windows in his workshop. "It made a statement to visitors about what a sophisticated place they were entering." By the early Renaissance, particularly in the Low Countries, clocks were designed with tubular bells and glass windows and mechanical figures popping out of trapdoors. "Keeping time became almost secondary to the amusement."

And someone had to keep them all running. Until the installation of an electric winch in 1912, at least two men worked five to six hours three times a week to wind London's Big Ben. "That's a huge responsibility," said Metcalfe. Which is why, he said, he turned down the offer several years ago to become Clock Master of the City of New York, a job that demands making sure that municipal clock towers in neighborhoods like Bowling Green and City Hall keep exact time. "New York! Imagine! It's one thing to forget to wind your watch, but to keep time for everybody else? No thanks. Besides, I'm not keen on heights. Or pigeon guano."

Small antique clocks provide just the right scale for Metcalfe, and the job of mending them comes with responsibility enough. "When people hand me their clocks," he said, "many of them plead, 'Please look after my baby.'" Which is why, in the week fol-

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(Signed) David R. Kefford, General Manager

lowing 9/11, he paced the police line waiting to get back into his workshop. How had one and a half million tons of debris falling two short blocks away affected all those babies in his care?

"When I finally got back into my shop, the windows were closed, but still, a fine layer of dust—what I've come to think of as 'finely ground zero'—covered everything in a ghostly kind of way," said Metcalfe, standing at a sunlit window, the Woolworth Building looming behind him. Below on the street, tourists studied maps in their quest for the Five Points, the Lower East Side Tenement Museum, the old Fraunces Tavern where Gen. George Washington, departing for a short-lived private life, bade farewell to his officers on December 4, 1783.

One of the "babies" in Metcalfe's care, this 1858 clock has wheels of ivory.

And the clocks—were they all running? "Oh yes," he said. "Some were even running that weren't working when I left. People often come to me with a clock that hasn't worked for years, and by the time they arrive at my door it's ticking. Why? Because the jolt of the cab ride has unstuck an old spring. On September 11, the clocks in here felt the crash of the falling buildings. And they came to life." ○

PATRICK COOKE is the executive editor of Forbes FYI *magazine.*

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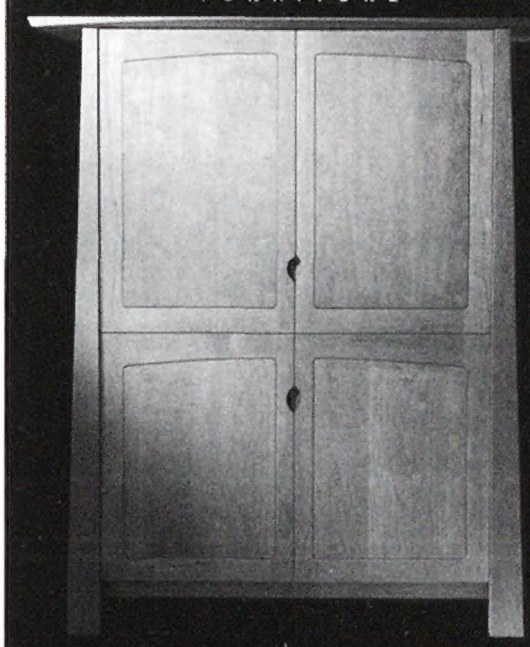

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Dear Santa

The world's most heartfelt wishes find their way to a post office near Rovaniemi, Finland – BY BARBARA SJOHOLM

ONE JANUARY AFTERNOON, with snow falling thickly, I traveled by bus from Rovaniemi, Finland, a few miles north to Santa Claus Village. I had wanted to go there ever since I heard the village had a post office. I was touched to imagine children writing to Santa, and curious to hear that Finland had a near-monopoly on the Santa letter trade.

I trudged through the snow to the post office, a log-cabin-style building divided into two rooms. One room has a fireplace, a wing chair, sacks of "mail" and a large wooden desk. All are props for photographs. During the Christmas rush, 4,000 people a day, from all over the world, come to sit briefly at the table or in the armchair and be photographed.

The other room has a counter and the usual postal paraphernalia, used for the post office's real function: to handle the hundreds of thousands of letters that arrive yearly from 184 countries. The letters are sorted and shelved in cabinets with glass doors, locked against those who would rifle them for stamps. They are labeled A-Z, Afghanistan to Zambia.

"Dear Santa," reads a recent letter to Finland's Santa Claus Village (above), "Please send information on your services for children. Mohammed, Baghdad, Iraq."

For two hours I sat and read letters while postal worker Tuija Pulju, wearing a red elf hat, red felt skirt and red reindeer-patterned sweater, came by from time to time. Children sent photographs, of themselves and siblings, of their dogs. Others sent only greetings to Santa and Mrs. Claus, or made requests: "Please Joulupukki [Finnish for Santa], Pray to God to bring peace once more to Sri Lanka."

Every year, tourism students at the University of Lapland in Rovaniemi turn up to answer the mail. The volunteers send 40,000 form letters to people who give return addresses, and hand write responses to 1,000 or 2,000 letters. These are the ones at the emotional core of the post office, the letters asking for medical care for a dying parent say, or, for a new limb to replace one blown off by a land mine.

"We can see everything that is going on in the world through the letters," said Pulju. "After Bosnia, we received many letters. September 11, that was in the letters. There were people asking for peace, an end to destruction."

After I'd been reading a while, the post office manager came out to greet me. Like Pulju, Taina Ollila was dressed in red: smart red suit, with a feather boa around her shoulders and bright red lipstick. She introduced herself as "Chief of the Elves." I asked how Finland had gotten the Santa monopoly. St. Nicholas was a bishop in Turkey, after all. It wasn't until an American farmer, Maj. Henry Livingston Jr., penned "'Twas the Night Before Christmas" around 1808 that jolly St. Nick turned up with eight reindeer and a sleigh. (Recent scholarship has unseated New York professor Clement Clarke Moore as the poem's author.) In 1863, Thomas Nast illustrated the poem and decided to dress Santa in a red suit and make his home the North Pole. In 1927, a Finnish radio personality called Uncle Markus announced that Santa's home lay on the border between Finland and Russia; by 1985, Mr. Claus had migrated slightly south to this log cabin. Finland's officials decided to market the Santa story to the rest of the world. "We've been successful beyond our dreams," says Ollila. "Last year, something like 180 film crews came: CNN, BBC, the Italians, Koreans, Brazilians, they were all here."

Ollila adjusted her boa and looked at the letters I'd been reading, from a school in Jedda, Saudi Arabia. "Sometimes," she confided, "I get fed up with the film crews. All they want is footage of the letters or of the addresses. But all of us who work here, we're affected by what we read. The sadness of children's lives, their hopes and dreams. People used to have the saints to call on when they felt they couldn't reach God himself. Now, some of them think, 'If God can't help me, maybe Santa can.'"

Before the day was over I'd written two letters. "Dear Santa," I wrote on the first one. "I need a new laser printer, preferably an HP Laserjet. Thanks! Barbara." And on the other I wrote simply, "Dear Santa, Joy to the World and Peace on Earth."

Then I mailed the letters and stepped back out into the falling snow. ○

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